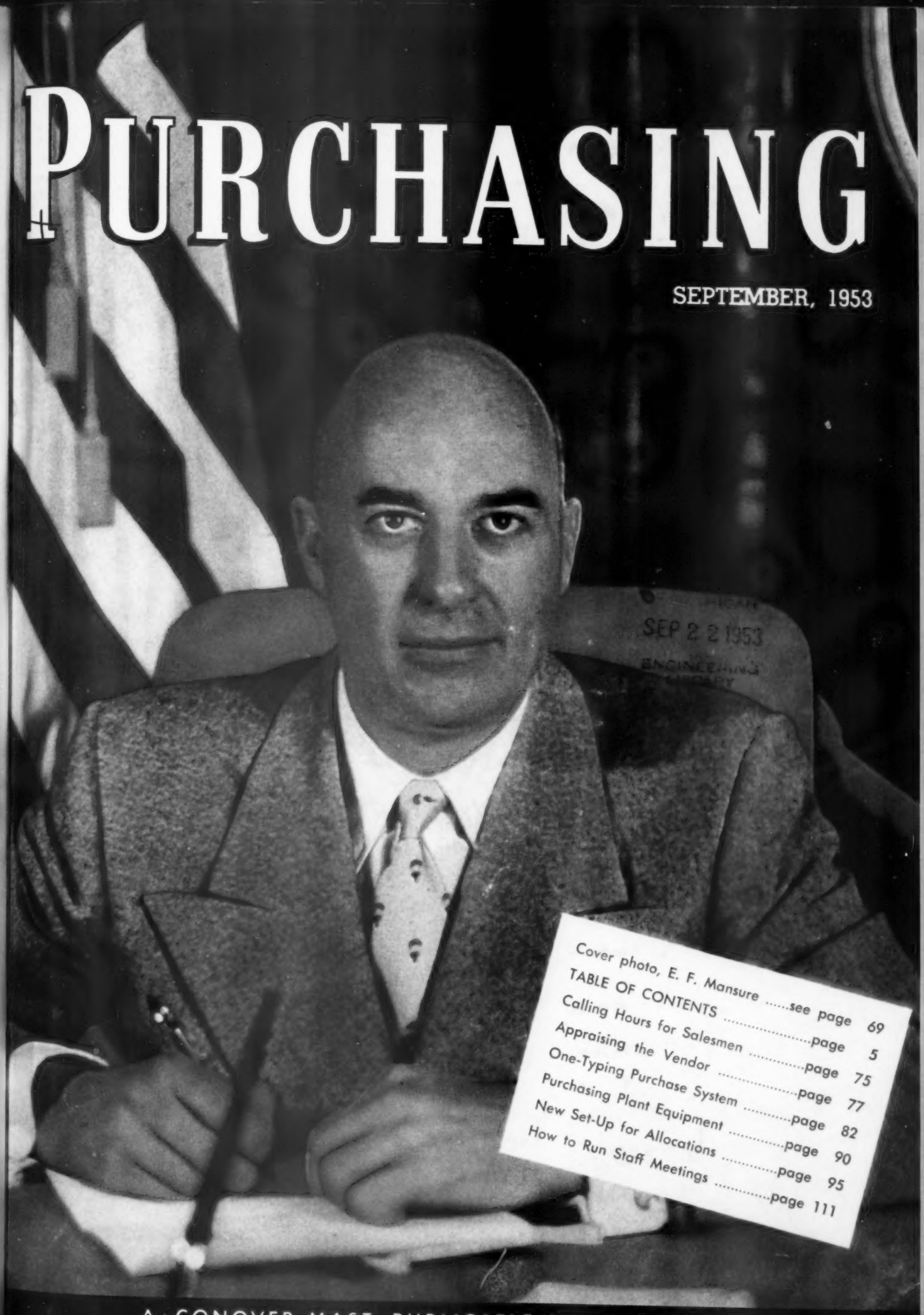
PURCHASING

SEPTEMBER, 1953



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PURCHASING

The National Magazine of Industrial Purchasing

VOL. 35, No. 3 SEPTEMBER, 1953

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737 North Michigan Avenue ..... *Chicago 11, Ill.*
1900 Euclid Avenue ..... *Cleveland 15, Ohio*
5478 Wilshire Blvd ..... *Los Angeles 36, Cal.*
National Press Building ..... *Washington, D. C.*

Published monthly by Peeaye, Inc.
Subsidiary of
CONOVER-MAST PUBLICATIONS, INC.
Printed at Orange, Conn.

CONOVER-MAST PUBLICATIONS
PURCHASING
MILL & FACTORY
AVIATION AGE
CONSTRUCTION EQUIPMENT
LIQUOR STORE
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CONOVER-MAST PURCHASING DIRECTORY
CONOVER-MAST BOOK DIVISION

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PURCHASING is an independent journal, not the official organ of any association. Established 1915 as "The Purchasing Agent". Consolidated with "The Executive Purchaser".

Contents are indexed monthly and annually by the Engineering Index Service.

Subscription rates: United States, U. S. Possessions, and Canada: $4 per year; elsewhere, $10 per year. Single copies, 50¢.

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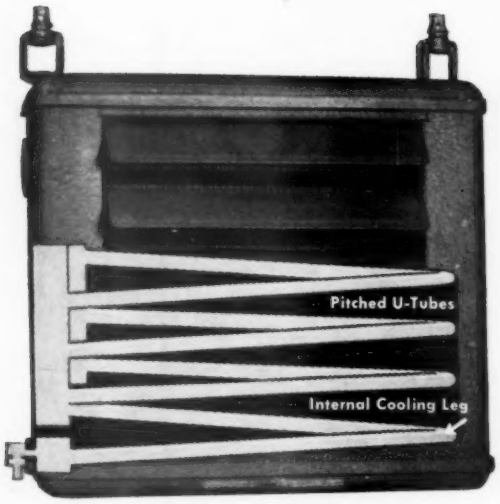
Printed in U.S.A., by The Wilson H. Lee Co., Orange, Connecticut



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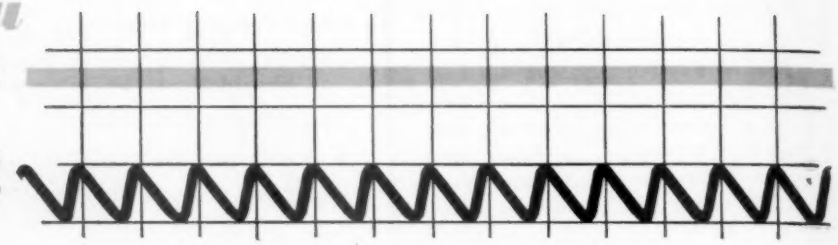

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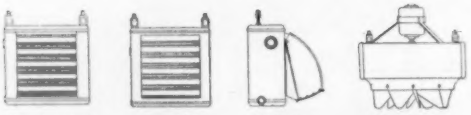

THERMOLIER FEATURES

INTERNAL COOLING LEG A Grinnell feature which permits the use of a plain thermostatic trap for draining condensate.

PITCHED U-TUBES Built-in pitch of U-tubes provides complete drainage of condensate and elimination of destructive water hammer.

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Check Thermolier's advantages at left. For more details, call your local Grinnell distributor — or send for catalog.

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Dangers Of Generalization

THIS month several thousands of Young Americans of college age are returning from a summer abroad, filled with the excitement and the broadened horizons derived from new scenes and new experiences. And on the student ships, group leaders are conducting evaluation classes and discussions aimed at putting those experiences into proper perspective. Their central, insistent theme is: Don't generalize from your own limited observation. It is a healthy word of caution against a common human trait. For whatever the individual experience may have been, translating it into broad generalized statements such as "It always rains in Sweden," or "All the British are poor cooks," or "All Europeans distrust Americans," leads inevitably to error, the very antithesis of the factual, sympathetic understanding which such experience and observation should foster toward the creation of One World.

Purchasing men, particularly those in the public service, have suffered from a similar type of generalization, as isolated, exceptional instances of inept or even foolish buying, or personal dishonesty, have been blazoned in the headlines, doing a grave injustice to the vast majority of capable, conscientious, and scrupulously honest buyers.

Purchasing progress itself has been retarded and sent off on tangents by those who have been too quick to generalize on insufficient evidence. For instance, we have only recently been through a cycle in which complete centralization was hailed as the cure-all for all purchasing ills, only to find, with the development of multi-plant operation and divisional organization, that moderate decentralization is the better answer. And unified governmental procurement, which seemed so logical, has also proved to have its limitations.

In the period of business readjustment that now confronts us, purchasing and management executives will do well to guard against misleading generalizations as the guide to their policy and decisions. The program that is based on a premise that "All products are in over-supply," or "All prices are inflated," or "All synthetic products are better than natural materials," is bound to run into costly and embarrassing error. Purchasing and economics, like the more objective fields of mathematics and the physical sciences, have their basic principles and axioms that must be learned. But the practical problem lies in selective analysis and application. That is where the science and the professional competence of purchasing make themselves apparent. Generalization can be fatal.

Stuart F. Heinritz

The BRAIN ...

has an No degree

One man, using a desk calculator, would work seven years on the problem this IBM "701" electronic computer solves in just a *few minutes!* In fact, this "brain" averages 14,000 mathematical operations *per second!*

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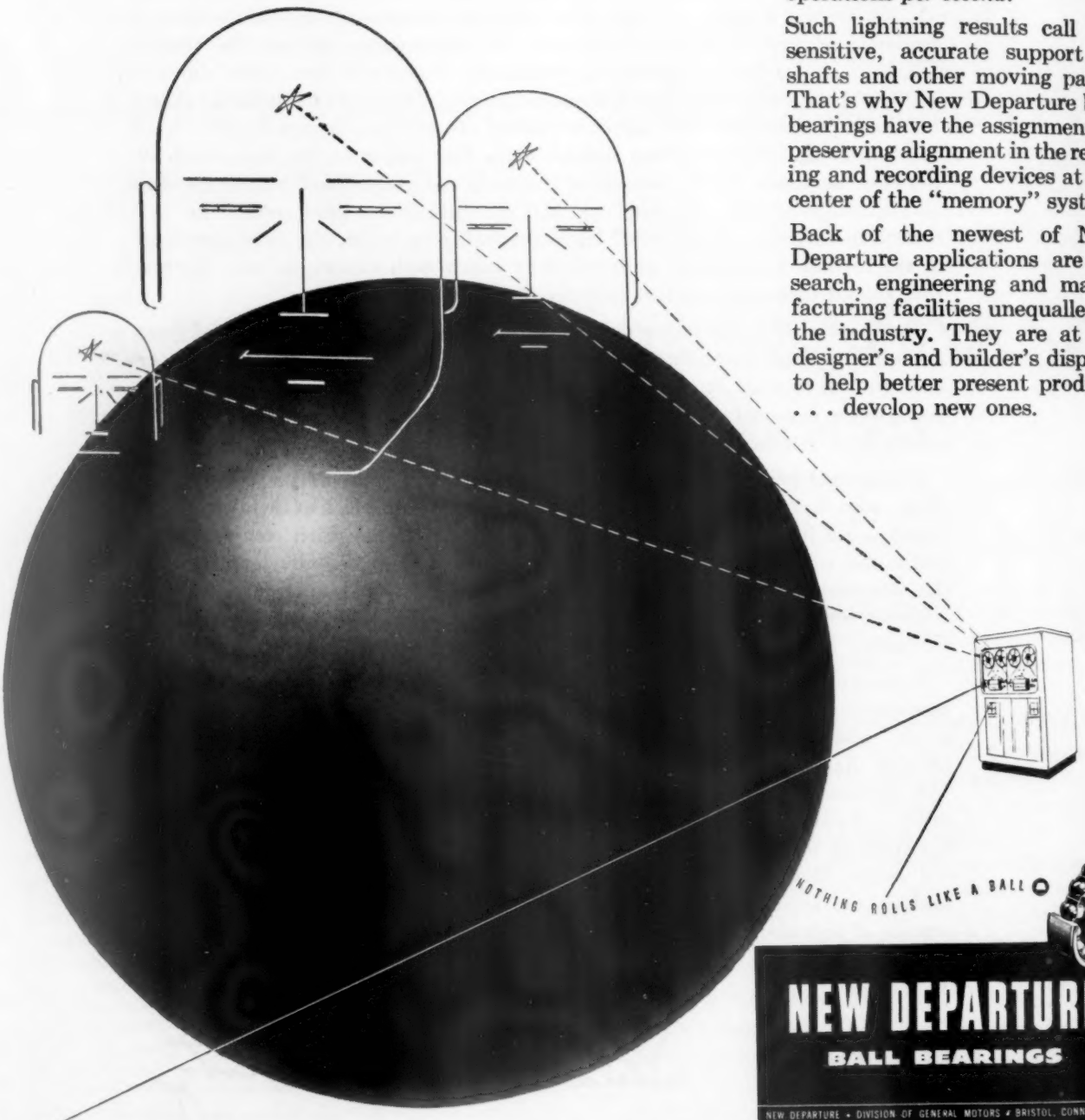
Back of the newest of New Departure applications are research, engineering and manufacturing facilities unequalled in the industry. They are at the designer's and builder's disposal to help better present products . . . develop new ones.



NOTHING ROLLS LIKE A BALL

NEW DEPARTURE

BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT
Also Makers of the Famous New Departure Coaster Brake

International Business Machines' new "701" electronic computer employs New Departure ball bearings for mounting the magnetic drum rotors, as well as the magnetic clutches of its tape readers and recorders. All units of the calculator are shown at left.

Highlights

This issue's important features summarized for the busy reader

Right vendor relationships, so important in all successful purchasing, start with the selection of the right vendor. That is a matter calling for good purchasing judgment supported by first hand knowledge of the vendor's facilities, capacity and service. Plant inspection visits are a basic means of **Appraising the Vendor**. They are most effective and beneficial when done according to plan, with a specific purpose. What to look for? On page 77, a seasoned purchasing-production team, dealing extensively with subcontracting on important military contracts, gives you the benefit of practical experience in this phase of buying.

In a highly integrated industrial operation like Kaiser Steel, the purchasing department has limited responsibility for raw materials, but to make the system function smoothly and economically, there must be an efficient method of supply procurement. Kaiser (see page 82) has developed a **One-Typing Procedure** that simplifies this operation and gets results. It can be applied to almost every purchasing department.

Tremendous technical advances have been made in improving traditional materials and adapting them to modern product requirements. Are you up-to-date on what is being done with **Rubber**—compounding, bonding, reinforcing, adding new properties, precision fabrication? The story on page 97 brings you a comprehensive review of these recent developments, with check lists and tables and a wealth of illustrations of representative product applications. Perhaps it will provide or suggest the answer for one of your own purchasing problems.

This month's **Guest Editorial** (page 69) is contributed by the man who is responsible for the nation's biggest purchasing operation—E. F. Mansure, Chicago business man who has taken over direction of the Federal Government's General Services Administration. His statement is a splendid exposition of the philosophy by which a business trained citizen can contribute most effectively to the business of government.

As the old CMP is superseded by DMS, purchasing agents must familiarize themselves with the new set-up and regulations on **Material Allocations**. Our Washington editor brings you this information on page 95, with a comparative table showing basic differences in the plans.

How much of the poor service you encounter in connection with **Telephone Orders** is actually due to your own shortcomings in handling this type of order? A service consultant gives some practical pointers on better ordering habits for better service. Turn to page 74.

Staff Meetings can be a most effective technique in coordinating purchasing department activities, sharing experience, getting ideas, solving problems, building morale, and developing personnel. Yet too often they degenerate into disappointing, fruitless, time wasting, routine affairs. For there are right ways and wrong ways of holding staff meetings. The article on page 111 tells you how to get better results—how frequently to hold such conferences, how to set them up and conduct them, and how to get staff participation.

Purchasing **Plant Equipment** is a job for a specialist—and we mean a specialist in purchasing. For the procurement of machinery, as with every other product or commodity classification, can benefit greatly by the practice and application of proved purchasing methods, despite a lingering tendency to leave it exclusively in the hands of plant men. The article on page 90 spells out the "Why" and the "How" of such buying, based on actual and successful experience in a representative plant where purchasing service has been extended to include this important branch of buying, to the satisfaction of everyone concerned.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 171). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking.

COMING—IN NEXT MONTH'S ISSUE

Getting the Most out of Die Casting—Purchasing in World-Wide Markets

Borderline Ethics—A Water-Borne Purchasing Office—TV Purchasing

Steel

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Certified Quality—Carbon, Alloy, Stainless

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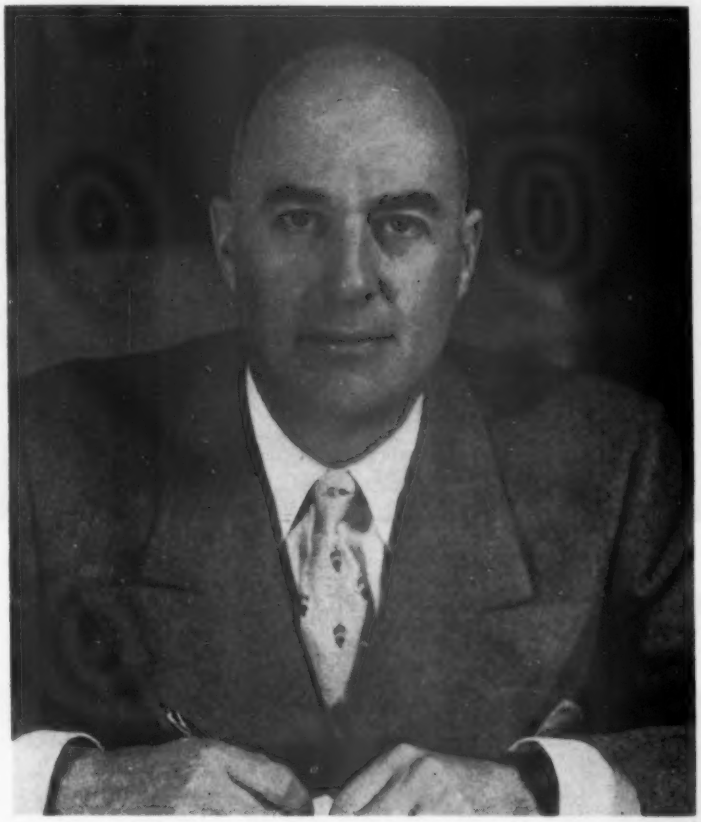
Business Methods in Public Purchasing

By Edmund F. Mansure, Administrator of General Services, Washington, D. C.



WHAT can a businessman who is a newcomer to the Federal service bring to public purchasing?

I welcome the opportunity of writing for an informed audience on the subject. In doing so, I have concluded that my contribution should be limited to a discussion of general problems rather than any analysis of specifics.

Techniques are important, of course. For that reason alone they should not be challenged or endorsed without thorough examination. But since I was sworn into my office only on May 2 of this year, I have by no means completed such examination.

On the other hand, the principles which govern purchasing — public and private alike — are not necessarily unique to themselves. Certain fundamentals are interchangeable. And while there are a number of factors to be considered when making purchases with the tax dollar,

---

EDMUND F. MANSURE, Chicago textile manufacturer, lawyer, and executive, came into the Washington scene in May 1953, when he was appointed to the dual position of Administrator of General Services and Administrator of the Defense Materials Procurement Agency.

Mr. Mansure received his education at Dartmouth College, Kent College of Law, and Northwestern University. Following in the footsteps of his father, who founded the E. L. Mansure Co., a textile and drapery manufacturing firm, he learned the business from the ground up, starting as a mill boy while still in his teens. He resigned as Chairman of the Board of Directors to accept his present Government appointment.

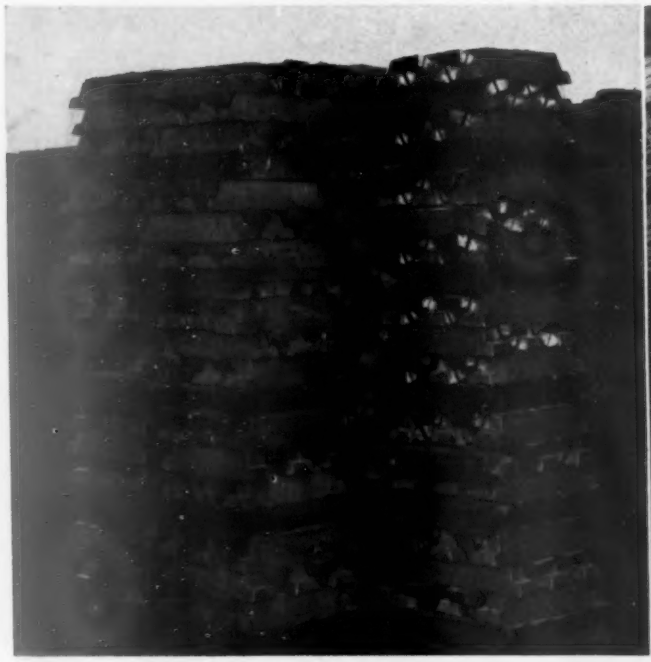
Long active in civic affairs, he has been a member of the Illinois Review Laws Commission, Illinois State Pension Commission, South Side Planning Board, Domestic Commerce and Public Improvements Commissions of the Chicago Association of Commerce, Chicago Crime Commission, Citizens' Waterway Commission (Chairman), Chicago Red Cross War Fund Drive (Chairman), Finance and Policy Commission of the Illinois Manufacturers Association (President), and other public service organizations. He has administered the funds of such civic enterprises as the Cook County Hospital (as Chairman of the Board) and the Illinois State Unemployment and Free Employment Advisory Board (as Chairman). The funds of these organizations run into millions of dollars.

The E. L. Mansure Co., recently merged with Joanna Western Mills, operates plants in Philadelphia, Bluefield (W. Va.), and Los Angeles. The company manufactures upholstery fabrics, draperies, and tapes, none of which are sold to the Government.

Mr. Mansure's Responsibilities

THE GENERAL SERVICES ADMINISTRATION, established in 1949 by the Federal Property and Administrative Services Act, serves other agencies of the Government in three main areas: real property management, personal property management, and records management. It includes the centralized Procurement Division, formerly under the Treasury Department. In addition, GSA handles the buying of strategic and critical materials for the National Stockpile, and manages the National Industrial Reserve, which includes the Government-owned Nicaro Nickel Plant in Cuba, six Government-owned magnesium plants, and the machine tool program.

THE DEFENSE MATERIALS PROCUREMENT AGENCY was established in 1951, by Executive Order, to assist industry at home and abroad in expanding the production of metals and minerals needed for the defense and economic progress of the free world as provided in the Defense Production Act. The Agency has developed programs to expand the production of 17 metals and 24 non-metallic minerals.



Pig Lead

Mercury

PURCHASED BY GSA FOR THE NATIONAL STOCKPILE

Crude Rubber

Chrome Ore

I believe that basically the Government purchasing officer and his industrial counterpart have a great deal in common. Their objectives are essentially the same — efficient, economical service.

Methods may differ, and because they do, both parties can perhaps profit by a continuing review of how the other does things. I am quite certain that many successful business methods are adaptable to governmental procurement, with its restrictions and safeguards, and that such methods not only should be accepted but should be welcomed.

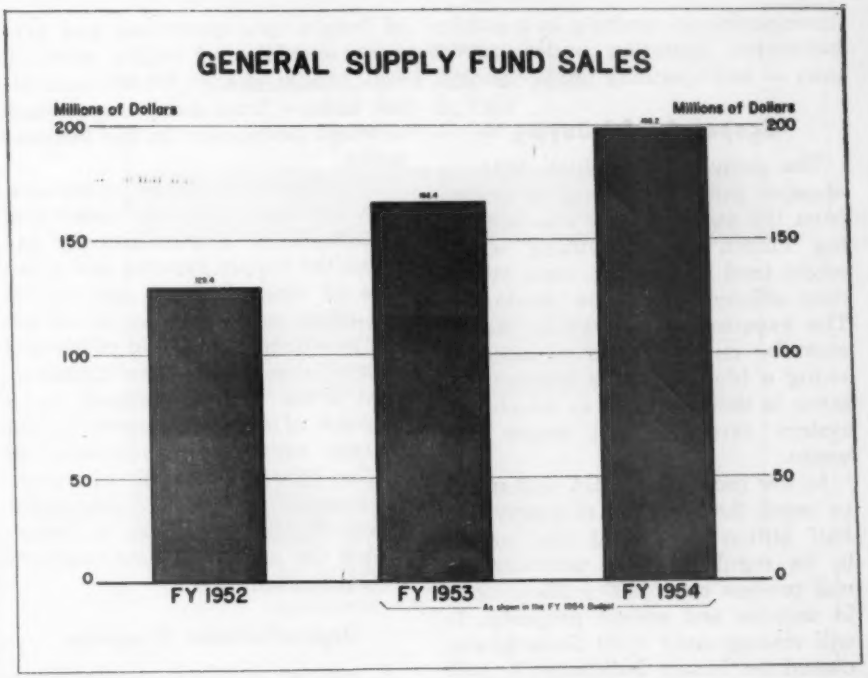
"The Government Way"

I am told that this philosophy can lead to misunderstanding if not properly explained. One of the biggest pitfalls confronting the businessman entering Government service is that he almost immediately becomes irked by the "government way" of doing things. In his private operations he develops a line of action beginning with investment and aimed straight at profit. No deviations are allowed. He cuts paperwork to the minimum, to reflect his own costs and profits and that is all. He "tailors" his practices to conform to those of the trade but, most importantly, he sets his own goals and presses them to the limit.

In Government, however, he frequently finds what seems to be too elaborate a structure for activities collateral to the main job. He finds requirements for full documentation of actions taken. He finds an administrative machine devoted to accomplishing things for obscure reasons. He finds a quiet devotion to precedent.

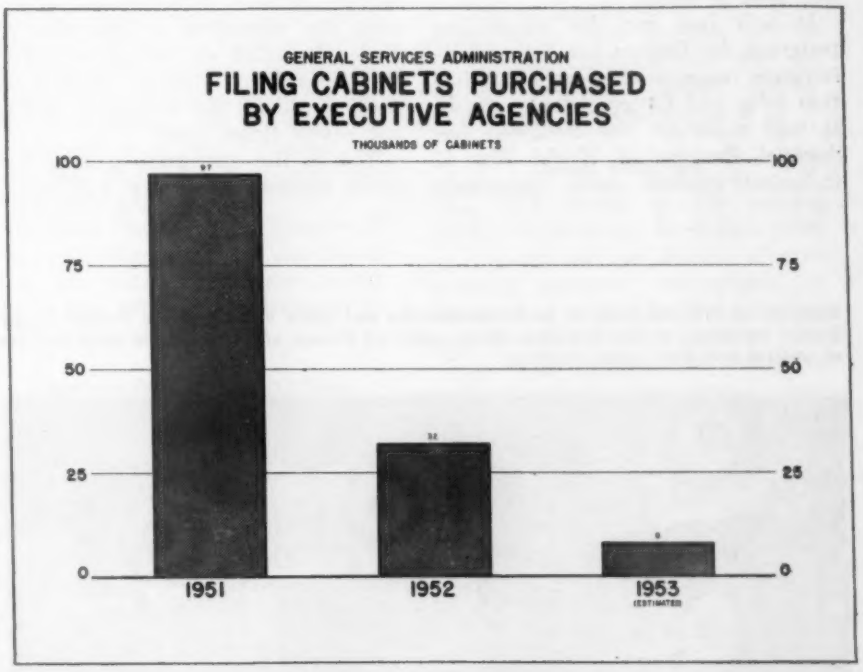
All this increases overhead. It is intolerable to his profit seeking nature. And when he tries to make changes he runs into barriers — legal and lethargic — which seem to add up to "it just isn't DONE that way in Government."

I recount this oft quoted theory to indicate that I am aware of its existence and to report that I do not believe in change as an end in itself. The very immensity of an operation in Government — say, for example, the General Services Administration — is enough to signal caution in ordering significant departures from procedure. I am aware that decisions can have the effect of chain reactions, destroying something far down the line which was not intended to be disturbed.



GOING UP!

Fiscal year 1954 will see a substantial increase in GSA's Supply Fund Sales. Purpose of this drive is to bring more federal agencies into the central procurement system for their regular administrative requirements, thereby taking advantage of GSA purchasing and utilization service.



GOING DOWN!

In 1951, the Federal Government purchased 97,000 filing cabinets. GSA's utilization activity, which includes repair and re-issue of used cabinets and moving old records to central storage points, releasing existing file capacity, is holding purchases in this category to 8,000 new cabinets yearly.

Nevertheless, it seems to me that the supply and property management activities of Government in particular should be dynamic rather than static. There is nothing sacred in precedents for buying procedure. Each of them must stand the test of *today*. The law, of course, is the paramount governing factor. The rules and regulations, as many as are necessary, must be observed to carry out the principle of equal opportunity for all suppliers. But ingenuity, inventiveness, the will and the ability to get the job done quickly and efficiently is not at all

incompatible to working in a public institution operating under public laws — and spending public money.

Scope of GSA Buying

The activities in which GSA is engaged are so vast and so crucial from the standpoint of the taxpaying citizen that anything which might tend to increase costs or reduce efficiency must be eliminated. The expense is so sizeable that it must be cut. There is no need to swing a bludgeon at a system; but there is definite need to watch the system carefully and excise the waste.

In this fiscal year, GSA will spend or impel the spending of nearly one half billion dollars of tax money in its regular supply activities. It will process over $300 million more in surplus and excess property. It will manage over 5,000 Government owned or leased buildings. It will employ nearly 29,000 people. It will schedule the regular purchase of nearly 60,000 items—10,000 of them required in such volume as to warrant warehousing in 4,500,000 million feet of space.

It will buy for the stockpiling program, for foreign aid, for administrative requirements and construction jobs, and for emergency needs. It will maintain the National Industrial Reserve of World War II industrial plants, issue thousands of freight rate quotations and prepare schedules of utility rates. It will handle nearly 100,000 individual bids — from giant corporations to small newcomers in the business world.

In addition to these operations, GSA will operate in the policy and planning field. It will critically examine the supply systems and practices of other Federal agencies. It will effect consolidations, in an effort to reduce purchasing points and achieve zone and central procurement areas. It will embark on a program of supply support for the military agencies' requirements of civilian goods. It will enunciate Government wide procurement policy. It will play a role in determining the advent of new products to Government use.

Unpredictable Program

It will be involved in specifications development and programs of standardization, consulting with industry. It will concern itself with motor vehicle management, leasing activities, communications networks, records management—planning the reduction or retention of Federal papers so voluminous that if collected in a single place now they would fill the Pentagon Building seven times over.

This is the vast panorama of activity against which we will work. It consumes the tax dollar at a respectable clip. It will change from day to day, sensitive to influences outside its own authority. Because of this, the demands upon the system of supply and property management are sometimes quite unpredictable.

For example, the rise and fall of Government employment and program activity both on a regular and emergency basis will have a direct and immediate effect upon GSA. We have been called upon almost overnight to equip a network of field offices for a new program — equip it from the ground up. This means providing space, utilities, furniture, expendables. To do so smoothly and without interruption calls for inventory management and supply operations with tricky problems.

Conversely, when programs cease — sometimes abruptly — needs for space contract and supplies must be returned to inventories. During such rises and falls in demand, not seasonal as in the case of other markets, we must attempt to maintain a stock turnover rate consistent with good business.

Rigid Rules

With all its vastness, with all its changeability and current problems from day to day, this entire system must operate under relatively rigid rules. We must buy under competitive rules, lease under set conditions, and dispose of material under exact terms.

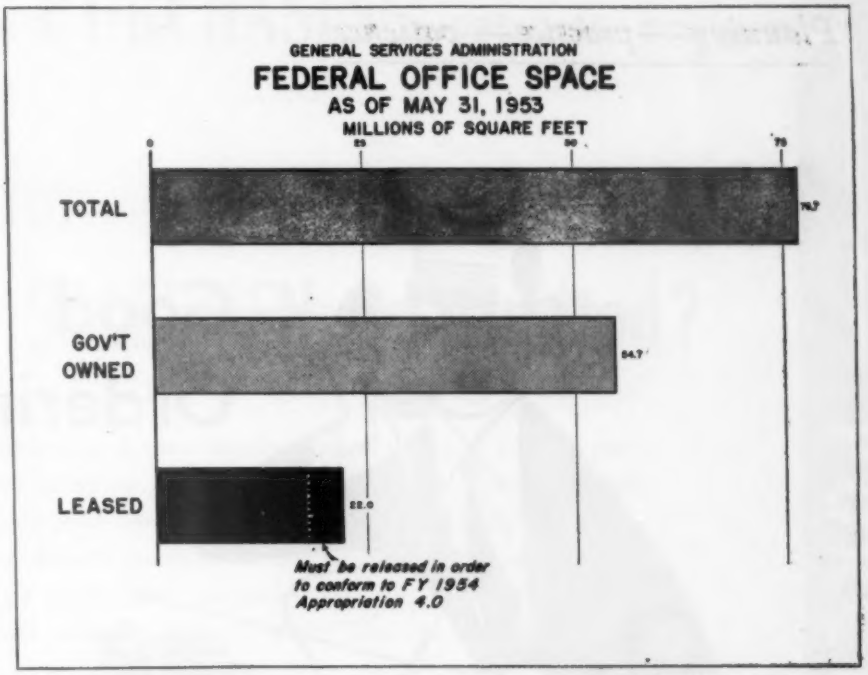
The challenge of the job thus lies in matching unpredictable needs against conditions of operation which are relatively inflexible. The nature of our operations in GSA are such that the more we do, even though our own overall costs may go up, the more savings are eventually returned to the Government as a whole. If this fact alone is not enough to make our value sometimes seem obscure, add to it the additional consideration that in doing our work — expanding our services — we frequently go through a routine which is not the most economical method of doing things, but is the required way, the "Government way", about which so many people complain.

A good example is seen in our routine buying. There is probably little doubt but that the most efficient and economical system to obtain repeat requirements is to develop a pool of suppliers and stick with them, "feeding in" new ones only in special circumstances.

Applying its own principles of good housekeeping and space utilization, the Federal Supply Service warehouse at San Francisco shows palletized storage of bulk items to make full use of vertical and cubic space facilities.

Not so in Government. The fundamental of equal opportunity for all potential suppliers is inherent in law. We must consider the bid of the newcomer to the field in the same light as we look at the industry leader. We must weigh factors of location in distress labor areas. We must weigh factors of economy in awarding tie bids. We must observe terms stipulated in the bid to the letter. We cannot deal, bargain, or counter offer.

All of this is expensive administratively. It means handling more than a minimum of papers. It means spending time in analysis that is not needed in private procurement. Of course the private purchaser also takes whatever steps are necessary to gain maximum value. We may have to take *more* steps than are necessary — to obey the principle of competition for all. That is as it should be. But it should be remembered when criticism is lodged against a given operation.



Federal Government agencies occupy 76.7 million feet of office space, leasing 22 million feet in addition to Government-owned facilities. The new GSA budget and program calls for compacting space requirements so as to release 4 million feet and reduce the lease-rental appropriation by 18.2%.

Matters of Principle

The same peculiarities to Government procurement exist in the field of negotiation. Negotiation implies speed, and gets speed, but frequently the documentation required to satisfy the General Accounting Office and the provisions of law is greater in negotiation than in competitive, sealed bidding. Again, this is as it should be. The principle is there to be observed. The possible savings lie in a continuous review of what is done to satisfy the principle and at the same time do the job.

I think this can be stated in very plain terms: The public purchaser sets out to do an efficient, economical job. To do it, however, he must go through certain steps and take certain actions which are not the straightest line between two points. But go that way he must, because of the competitive principle and because his stewardship of public funds requires a completely documented accounting. In each action taken, he is not aiming alone at satisfying the eventual user of the materials he buys. Ever present are two other entities deserving of satisfaction: The public whose money he spends, and that element of the public from whom he buys.

These responsibilities are evident in every aspect of the supply and property management function. They are present when the development of specifications is undertaken. In such cases, we ensure quality for the user, but must at the same time avoid restrictive or collusive specifications which will bar a segment of the bidding public. We must stick as much as possible to industry standards, both for the sake of economy and because the widest pool of potential bidders, all deserving the right to quote, can satisfy only in that area.

We must consider the rights of all concerned when we zone purchases, when we establish supply points, when we schedule deliveries or make spot purchases.

Toward Better Utilization

And ever present in our mind must be the will to preach the doctrine of utilization, simplification. We must resist the impulse to buy mechanically; merely to find out what the consumer wants and get it. We must cajole the using of less, using it better and using it longer. We must do this to simplify the disposal problem — and to carry out our moral obligation to make sure that there is no waste resulting from our purchases.

The law arms the central supply agency of Government with a good deal of power in this field. But the practical situation demands that more than authority be exercised. Education is the answer to utilization. Even though it can be assumed that using agencies have the same desire to spend public funds warily, the individual agency is not in the position to know what exists as surplus, to know what new item or device is best for the job in every case. These things are not remote from the supply agency job — they are integral to it.

Help Wanted

As GSA moves in the coming months to carry out its assignments, we hope to take advantage of professional opinion everywhere, in Government and in business, to operate at peak efficiency.

Not only will we be receptive to the objective criticisms and counseling of professional purchasing agents — we will actively solicit them. I am therefore taking this opportunity of indicating to you, as buyers and supply experts, that GSA needs and wants your advice.

If you believe that as a technician and a citizen you have a contribution which will make the procurement activity of GSA better and more economical, let us have it. If you are in Washington, we will be glad to see you. If otherwise, you are invited to visit our Regional Director nearest you or to let us have by mail the ways you think we can improve.

GSA will be progressive and openminded. We are fully aware of our obligation to the agencies who depend upon us and to the businesses with whom we deal. Our efforts will be devoted to carrying out these obligations successfully.

Planning—practice—patience

Good Ordering Habits

By Robert E. Lovett
Customer Service Consultant

SURE, you've got complaints about how some of your telephone orders are handled, and good reason to complain, too. Who hasn't. Maybe you've come to the conclusion that the clerks who man your suppliers' order boards are just about the least intelligent and cooperative form of animal life there is. But maybe you don't realize that that's exactly what the order clerk is thinking about you. It's a two-way deal, you know. When trouble arises, what's the answer? Poor service—or unreasonable customers? There may be a little of both.

First, there is the foreman who calls the telephone order board direct. He wants a file. He's not even sure what kind of a file. Same as the last time, whatever and whenever that was. When the clerk asks him for an order number, he reacts as if he had been stabbed.

"Order number! Look, Mac, I'm running a shop here. There's little enough time to do what has to be done, much less worry about order numbers. Call the purchasing department; they seem to have lots of time for paper work. All I want is a file." Click! The foreman has hung up.

Result: The foreman gets the wrong merchandise, and the standing three-way feud between the shop, accounts payable, and the purchasing department flares out anew.

Poor service—or unreasonable customer?

Or the buyer gets a requisition from the president's secretary for a seat cushion. That's all the requisition says—"one seat cushion". The buyer calls up the office supply house. Patiently the clerk describes the five different seat cushions they carry. The buyer is stuck; he doesn't actually know which one he wants. He may leave the clerk hanging on the phone while he hunts up additional information; he may call back. In either case, he has wasted time for both. Maybe, to solve the problem, the buyer simply orders the most expensive cushion the vendor has—after all, it's for the president's secretary.

Result: The merchandise is eventually delivered—and returned. Wrong color. Everybody's disgruntled. The buyer has to pacify the secretary, and the salesman has to pacify the buyer.

Poor service—or unreasonable customer?

The verdict, in either case is the same. It's a vicious and all too common circle. Nobody wins.

A recent survey indicates that most vendor companies acknowledge that a good deal of the trouble causing poor service frequently lies with the telephone order board, and many are training their boards accordingly, to overcome the difficulties. It's a special kind of salesmanship. At the same time, there is much that a buyer can do to help an order board clerk place an order correctly, to his own benefit as well. You are probably aware of this. However, you may find a review of the following points helpful.

Certainly, if you can answer "Yes" to all of the questions, you can be sure that you are doing your part in making good service a real possibility.

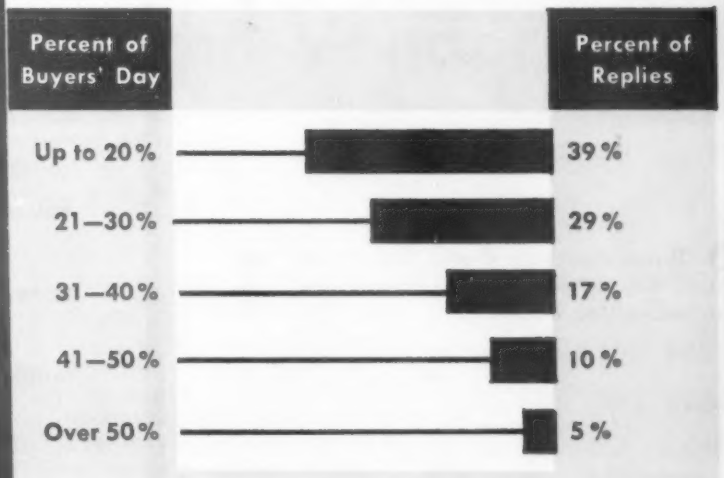
(*Please turn to page* 342)

PURCHASING OPINION

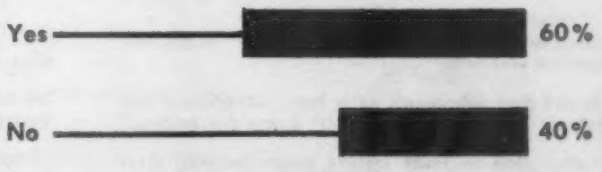
Should Hours for INTERVIEWING SALESMEN Be Limited?

The sales interview is an extremely important part of the purchasing agent's activities, but some purchasing departments have found it necessary to set certain hours for seeing salesmen. In order to get a broad picture we asked purchasing men, in a cross-section of purchasing departments, for their interviewing policies and the reasons behind them. The combined answers follow.

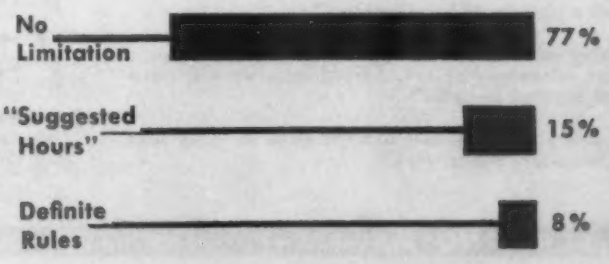
1 What percentage of your buyers' day, on the average, do you estimate is spent in interviewing salesmen.



2 In your opinion, would the interviews themselves, and other departmental activities, be more efficiently handled if they could be scheduled for specified hours of the day.



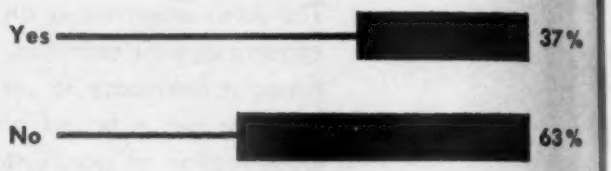
3 (a) Has your department set definite, limited hours within the working day for interviewing salesmen (with due allowance for emergencies, special appointments, etc.).



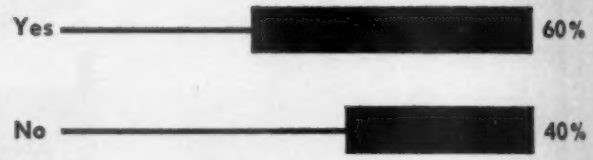
3 (b) If specific hours for interviewing have been indicated, either suggested or by definite rule, please specify what these limitations are. ?

Wide variations in days and hours were reported. However, 51% of those who have established specific hours interview 5 days a week; 21% twice a week (Tues. and Thurs. predominating); 12% three days; 9% four days; and 7% once a week. In interviewing hours, as with days, distinctions were drawn between local and out-of-town salesmen. Location of buying company also was considered. Interviewing hours showed that 63% are scheduled partly in the morning and partly in the afternoon; 16% in the morning only; 13% in the afternoon only; and 8% are scheduled for morning one day and afternoon on another day.

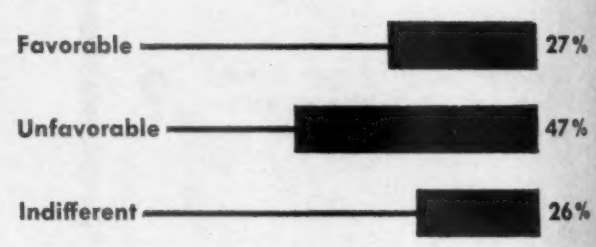
4 Do you feel that limiting salesmen's calls to certain hours restricts your own buying opportunities and operations. ?



5 Do you feel that restricted calling hours are unfair to salesmen. ?



6 What reaction, if any, have you found among salesmen in respect to limited calling hours. ?



WHAT THEY SAY

"If salesmen called before or after specific hours, we might lose valuable information and help."

"At times we found that salesmen's calls have interrupted our work, but as yet we have not limited their hours for calling."

"We have not attempted to limit calling hours because most salesmen who call on us have to travel approximately 100 miles and they have no other accounts in the area."

"Should all buyers in a salesman's territory limit hours and days, it would be impossible for the salesman to make all his calls. I do not believe such a plan could be scheduled."

"We treat visiting salesmen in the manner in which we would like to have our salesmen received. Accordingly, we will interview a salesman anytime he calls."

"Limiting call hours would permit concentration on other matters, including necessary paper work."

"We suggest Wednesday from 12 to 4 p.m., but for out-of-town visitors we admit them anytime."

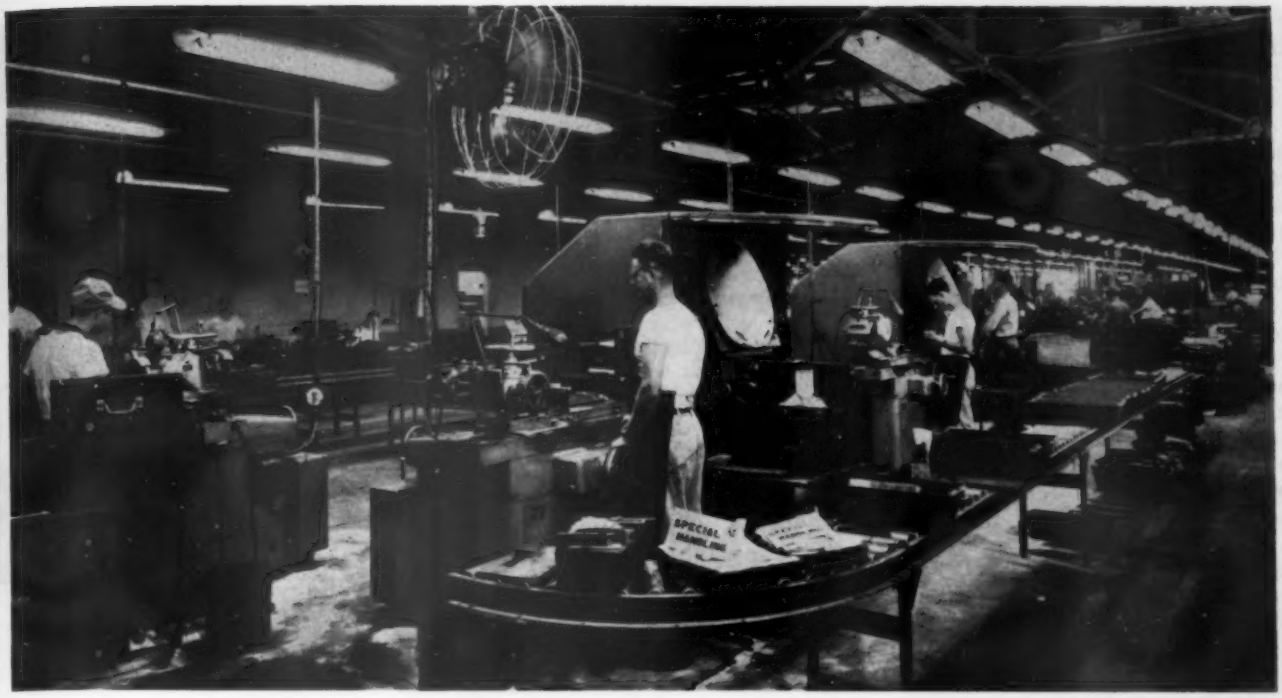
"Although not yet established, we are definitely considering 'restricted' calling hours."

"Restricted calling hours tend to bunch-up interviews too much. It wastes salesmen's time through everyone arriving at the same time and having to wait."

"While I feel it would help us to handle other activities more efficiently, I feel that the fine cooperation and counsel obtained from our vendors might be hampered by hour restrictions."

"When speaking of limitations, I am under the impression it is common knowledge among salesmen that their calling hours are from 9 to 4."

"I feel that it is much better to have a scheduled hour for seeing salesmen in order to avoid having them call and being unable to see them because of other commitments."



Appraising the Vendor

By Robert J. Flynn, Manager of Procurement
and Alfred J. Grotheer, Production Manager
Range Finder Department, Arma Corporation, Garden City, Long Island, N. Y.

EVERY experienced buyer has his own method of appraising vendors. Some are stricken from the list after a short visit of the salesman. Others are lost because at the first glance at the facilities list, the buyer realizes he will not have call for such equipment.

But a good buyer is always on the lookout for new facilities because he knows that so long as he keeps the competition keen he shall maintain the highest standards of quality. Hence, once a prospective vendor has passed the initial tests and has aroused interest in the buyer, salesmanship — as such — comes to an end. That's the point where the buyer must *convince himself* that the vendor is capable of doing what he says he can. That calls for a visit to the vendor's plant and a first hand examination of the shop.

A visit to the plant by either the buyer himself or a company representative is just about an absolute "must". After all, the vendor is trying to become almost a subsidiary of the buyer's firm. He is offering to sell, for a specified period, the use of his plant. The buyer is, in effect, determining whether or not the vendor's shop shall become part of his own firm. Such a determination is hard to make by second-hand knowledge.

What then are the things for which the buyer looks during his visit? What are the things which, during the limited time for examination, will tip off the buyer as to future possibilities of the shop? They are many and varied but the following supply most of the clues.

Good Housekeeping

First of all, the moment the buyer steps into a shop he takes a glance around for general housekeeping. The general principles of cleanliness that apply to all other walks of life apply just as well to the machine shop industry. A good shop is like a good housewife. If the rooms are clean and tidy, the organization is probably efficient and the cooking is probably better than average.

So the buyer should note whether or not the benches are kept in a workmanlike manner. Are the workers utilizing their full work

WHAT TO LOOK FOR AT THE VENDOR'S PLANT

- Contract Performance
- Facilities
- Shop Specialties
- Supervision
- Morale
- Good Housekeeping
- Quality and Cost Control
- Tool Crib
- Handling of Finished Parts
- Shipping Methods

area or are the benches cluttered with dust covered objects? If so, the buyer probably will get the same impression as he would if he were watching two women bake cakes. Without even tasting the wares, he could probably tell which had baked the best if one ended up with the whole kitchen littered with pots, pans, flour bags, icing bowls and the like, and the other always had only the object she needed in her immediate work area.

Along this same line, the buyer should note whether or not the machines are clean. He should look to see if they are full of chips, thus showing they haven't been cleaned in two or three weeks. Looking further, he should see if the stock is kept in good order. Is it kept in racks or piled in a corner? If kept in racks, is it segregated according to classification?

Lastly, it should be observed if the machine tool accessories such as milling machine heads, vises, collets, etc., are kept in an orderly manner.

Shop Specialties

The next things for which the buyer should keep his eyes open are the particular specialties of a shop, be it milling, profiling, automatic screw work, or any of the many other types of specialties. In this same line, he should note any new means to an end for which he may be searching. Or even if he is not looking for a particular type of work, he should remember that any special adaptations of equipment are clues to the imagination of the shop's plant manager.

On one occasion a buyer was making a routine examination of a shop under consideration for addition to the buyer's approved list. As was his custom, he made note of special adaptations of equipment and recommended the shop as one "highly imaginative" in meeting production problems.

Three months later he had need of 300-400 feet of a miniature size eye beam not available on the commercial market. He knew that on a short run of this kind, precision milling would run into extra money. He then recalled the shop he had visited 90 days before, took out his report on their operation, and saw that they had developed a method by utilizing a planer and a form tooling procedure which made them more than competitive on short run operations of this nature. At a time when precision milling capacity was at a premium, he had found a buyer's treasure.

Next on the agenda should be a look at some of the prints to which the shop is working at present to determine what type of work they are doing. It should be remembered that simply because a shop has a full load and is doing excellent work, it does not mean the shop can handle every type of job.

Equipment and Personnel

In this connection, you should find a machinist working on a close tolerance job. How efficiently is he handling his work? Is he on the job every second? Does he devote an amount of checking time proportionate to the tolerance of the work? Give him the same "once-over" that you hope your own company's foremen give their men. Remember you are indirectly considering him for employment by your company. During this visit you are a combination buyer, inspector, foreman, and personnel manager.

And, having looked over one of the men who may be doing some of your work, take a look around the shop and determine the sufficiency of the supervision and whether or not they are on their toes. Will they push your work in and out in good shape? Do they look enthusiastic?

Having satisfied yourself as to the machinery and personnel in the shop, a check of the other types of equipment is in order. It is usually a good idea to check on the volume of tools and parts in the tool crib. This is always an indication of whether or not it is a shop which likes to remain prepared for any type of work or whether they will always be running out and buying a few special cutters or the like. In this same vein, note the quantity and quality of surface plates and small checking tools supplied to all workmen in addition to the normal facilities in the shop's inspection section.

How Goods Are Handled

At this point there should be an inspection of the "service" facilities. Realizing that close tolerance work can be ruined if care isn't taken with it in handling, the first place to stop is in the shipping section. This is your opportunity to see how they handle somebody else's parts before you place your order.

It is not a rare occurence in subcontracting to find a shop with top-notch equipment and well-trained personnel only to see them take 150 lbs. of close tolerance machined

A well stocked tool crib is evidence of solidity and preparedness, and insurance against costly, annoying production delays.

parts and pile them into cardboard boxes. Or, worst of all, they put the parts in "tote" boxes with some surfaces protruding above the top of the box and three or four more boxes piled on top. This is always the same vendor who, when he receives a large lot of rejection reports, steams into your office and demands that you come over to his shop to view his excellent inspection facilities and highly experienced inspectors. If some kind-hearted soul had pointed out to him that all the equipment and inspection facilities in the world will not protect the material after it passes inspection, both the vendor and the buyer would be able to avoid a truly miserable hour.

Check Delivery Performance

At the time of checking the packing and shipping procedures an inquiry should be made as to delivery practices. Will he be relying on your pick-up trucks, does he have his own, or does he regularly use a trucking concern? If the shop is a distant one, have they used Air Freight services or, in other words, can they get material to you in a hurry if an emergency should arise? Sometimes familiarity with such means of delivery can mean the difference between a moving assembly line and one hundred assemblers standing with their hands in their pockets.

A very useful means of determining the attention of the vendor to delivery schedule is to ask to see an order on which the vendor is

presently working. Once it's produced and the delivery schedule noted, ask to see the shipping records and find out how closely he has adhered to his commitments. This is also a good time to find out how he stands quality-wise on the same order. Another purpose served by this same check is that a screening of the orders and delivery dates will give you a realistic picture of the shop-load after having had a look at some of the prints on which they are working.

Shop-Appraisal Important

Some buyers might feel that by taking such precautions they might be over-doing it or taking a chance of insulting a prospective vendor by appearing distrustful. Be that as it may, the benefits far outweigh the possible pitfalls. At least the vendor knows that such a thorough investigation must mean a thorough and efficient company. And the buyer who makes the shop-appraisal may be the only member of his firm ever to come in contact with the vendor.

Furthermore, if the vendor has given you a truthful picture from the start, he's usually happy to see you prove out his statements for him. And, lastly, he has a clear indication that he had better do what he starts out to do or he can look elsewhere for work.

The final step in a general appraisal of this sort is a review of the shop's business background. The first question would cover the firm's annual volume from defense work and this, in turn, calls for an inquiry into the results of any renegotiation proceedings if the volume was in excess of $250,000.

The buyer should ascertain the cost break-downs allowed on renegotiation, including the average hourly direct labor rate, the percentage that overhead bears to direct labor and, lastly, what profit was allowed under renegotiation. To wind up this phase of the cost investigation, the buyer should determine whether or not there have been any major changes in that cost structure.

Business Factors

In the event that the firm's business was not subject to renegotiation proceedings, the buyer should ask if any orders recently handled were of a cost plus nature. That is to say, cost plus fixed fee, time and material, or fixed price with redetermination and, if so, whether or not they were audited under such contracts. If the answer is in the affirmative the same questions as asked in regard to renegotiation should be put to the vendor.

Such information, although not completely verified, can prove to be of great importance to the buyer when he receives quotes from the vendor in the future. If he has an estimate as to shop hours needed to make a particular part and knows the vendor's cost picture, it's not hard to calculate whether or not the shop is trying to make a killing at his expense.

Naturally, just because a shop doesn't have many of all kinds of machinists and machines, tool designers, process men and elaborate cost systems it doesn't mean that it isn't efficient.

Worth the Effort

Almost every subcontract buyer can quote a case similar to the following true instance. A buyer working under a prime contract was having tremendous difficulty locating a vendor for some tricky lathe work. None of his regular vendors wanted to fool with it. He called a buyer at another prime which had a contract to make the same instrument for the government, and asked him where he was procuring the part. He was given the name of an out-of-town shop of which he had never heard.

Without further ado, he picked up the phone, called the vendor, placed an order and was getting partial deliveries in a few days. The parts were of top quality and the buyer, gleeful at having discovered a new source, decided to place a few other jobs in the same shop. He got the shock of his life when he learned that the vendor himself was the only employee, that the lathe was in his garage, and that that was the only machine. Here he had found the one-man shop where a man quotes a fair price on a part and, if he runs into trouble, doesn't mind working far into the night to iron out the bugs. All he is trying to do is make a good week's wage and doesn't mind putting in long hours, if necessary, to do it.

Build List of Reliable Houses

But there aren't enough one-man shops to handle all the subcontract work. In fact, one of every buyer's toughest tasks is to build himself a list of substantial, reliable houses on whom he can draw for their services. It is an absolute necessity that he devote himself arduously to this because a proper beginning in this, as in any field, is as good as money in the bank — figuratively and literally.

Nothing is more revealing, or more important, than the care used in handling and shipping finished products.

How Motorola Inc. meets the buyers' market

A "PURCHASING WORKSHOP"

Motorola's purchasing workshop in session. Questions and comment were encouraged, and outline notebooks provided the means for future reference.

Discussions were continued in smaller groups around the table. A stenotypist put everything on the record. In this group are: John Slobodnik, Ed Penchard, Chuck Ramsay, Harry Craver, Rolly Welch, and Jim Cronin.

By J. P. Reichmann, Jr.

WITH the country rapidly entering a buyers' market, alert management is seeking to adjust its course to the new condition. Officials of Motorola Inc. found at least one of the answers in the fact that "A savings of 10% in material costs is equivalent to doubling the sales volume." Following through on this theme, the company held a series of workshop conferences for its procurement division at Aurora, Ill., in June and July. It is believed that these were the first such conferences held by a procurement division in the history of the electronics industry.

More than 120 buyers and expediters assembled for these meetings. Purchasing men from the consumer goods, military, communications, and electronics divisions in the United States and Canada gathered, in groups of 40, on three separate week-ends in a downtown Aurora hotel.

The meetings were conducted by an 8-man top management committee under the guidance of Bill Arnos, Director of Procurement, Consumers and C & E Division, and John O'Donnell, Director of Procurement, Military Division. The meeting programs redefined the responsibilities of purchasing agents and expediters, and pointed out the principles of modern purchasing around the theme, "Purchasing is a profit-making department."

The men arrived on Friday evening with their pre-conference assignments and overnight bags. Around the dinner table they got better acquainted. It was far from

Left: A premium was placed on prompt attendance. Late-comer Paul Stancik of Phoenix, Arizona, drops a dollar into the "Tardy Till" held by Russ Lauten, administrative assistant. The money thus collected was used as a door prize.

Right: Audience participation paid off. One of the purchasing men here gets a half-dollar for his right answer from Frank Domark, electrical buyer at Motorola's Chicago purchasing office, who led one of the sessions.

a solemn occasion, but they were there for business. Conversation naturally turned to the Heinritz text book "Basic Principles of Purchasing" they had just finished reading as a part of the pre-conference work.

Keynote of the meeting was set in an informal address to each group by Frank J. O'Brien, Vice President in charge of procurement, who emphasized the trend toward a buyers' market and pointed out that it is purchasing's responsibility to "take up the slack" of lower profits in spite of high volume sales.

Early the next morning the men, still clutching their "bookwork", gathered in the conference room. They sat in groups of six to a table. A workshop packet containing material for the balance of the week-end was placed before each participant.

With the playing of their familiar birthday-song theme, "Motorola TV", the conference was under way. A leader explained the simple rules. "It's your meeting," he told them. "It's your ideas, experience, and viewpoints that we want to bring out for the mutual benefit of all of us. The more you participate, the more you'll get out of it—and it will mean half-dollars for those with the best contributions."

Spiral bound notebooks were provided for taking notes. The pages were partly filled in with an outline of the main points coming up for discussion; the remainder was written by the men themselves as the meeting progressed. This allowed the participants more time for concentration, kept them thinking as they wrote, and gave each of them a complete recapitulation of the week-end's proceedings.

A brief "history class" at the first session filled in the background and opened the way for the serious matters to come. The 25-year growth of Motorola was reviewed. Old-timers jumped at the chance to reminisce before the younger buyers, some of whom scarcely remembered ordering parts for the 7-inch TV set in 1947. They retold the story of how their president, P. V. Galvin, had sought a European supplier for an essential part of his first mass-produced car radio. Procurement was a top management concern even in those days.

Then the meeting went on to the specific business of the day. Purchasing was defined as "getting the most out of every dollar spent". The purchasing man's job responsibilities were analyzed in the light of attitude, knowledge, and skill. Each man knew his own job and the activities of his own department; the week-end showed them the over-all operation of the procurement division and how it fitted in with the plans, policies, and operation of the company as a whole.

The birth of a new product was studied from the gathering of basic market information through engineering, styling, testing, and up to the point at which purchasing "takes over". The men were called on frequently to trace and route the product parts to the production line. Their knowledge of purchasing principles and methods was tested with regard to sources of supply, job organization, delivery cycles, inventory control, and transportation.

A burlesqued telephone call skit illustrated how not to handle suppliers. It was worth half-dollars to those in the conference who could best correct the errors with the right kind of telephone techniques.

That evening, between meetings, the men had "home work" assigned in preparation for succeeding sessions. They read of the important difference between follow-up and expediting procedures which were to be discussed the next morning. "Never expedite until follow-up has failed," they learned.

Towards the end of the two-day session, Motorola quality and standards were discussed in terms of healthy supplier relations. The men were given a supplier evaluation chart, with which they rated their suppliers by applying the basic principles of purchasing. "This chart becomes a two-way street when it is shown to one of our suppliers. We can then sit down and iron out our mutual problems," Bill Arnos said.

Total cost of the conference ran to more than $15,000. In the parlance of purchasing, it was considered a "good buy". Said Vice President O'Brien: "The cost of the workshop was well spent, when our people returned with a fresh and broader concept of their profession."

Buying and maintaining a stock of 60,000 items

D. B. Kitchel, Purchasing Agent, Fontana

"One Typing" System Simplifies Steel Mill Purchasing Procedure

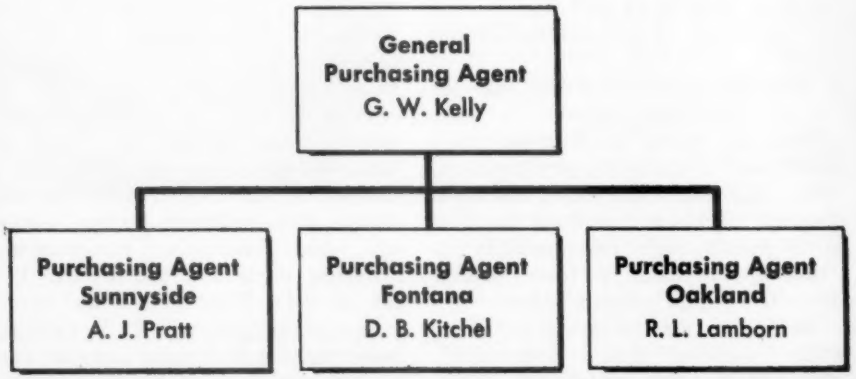
By D. B. Kitchel, Purchasing Agent, Kaiser Steel Corporation, Fontana, California

STEELMAKING at Kaiser Steel Corporation's big Fontana plant is, of course, a large scale operation. Purchasing to support that operation involves more than 60,000 items that are kept in warehouse inventory, but basically the program is one of relatively limited quantity purchasing, since in this integrated type of organization virtually all of the raw materials we use in making steel are obtained from Kaiser-owned mines.

Consequently, the purchasing responsibility at Fontana comprises, briefly, the procurement of major items of plant equipment and all of the miscellaneous tools, supplies, materials and parts that are essential to the continuous and efficient use of existing plant facilities. This includes not only the normal schedule of maintenance and operating supplies, but an extensive inventory of replacement and repair parts. For example, after procuring a new line of equipment, we must remember that certain of the equipment components are subject to wear and damage, and we must buy all of the items that may be necessary to keep that equipment in operation with a minimum loss of time.

Because this necessitates the maintenance of warehouse stock comprising hundreds of different articles, some of which may not be needed or used for months or years, we usually find that it is economically impractical to purchase large quantities of any one item. With such a wide range of articles to be provided, we must be careful not to tie up an unnecessarily large amount of working capital, and we must particularly guard against the hazard of having stock become obsolete before it has served any useful purpose.

Therefore, while we obtain competitive bids and make every effort to procure the best merchandise at the most reasonable prices, the primary objective of our purchasing department is to perform a complex (yet routine) series of operations with maximum efficiency — not to pinch pennies in dealing with vendors.

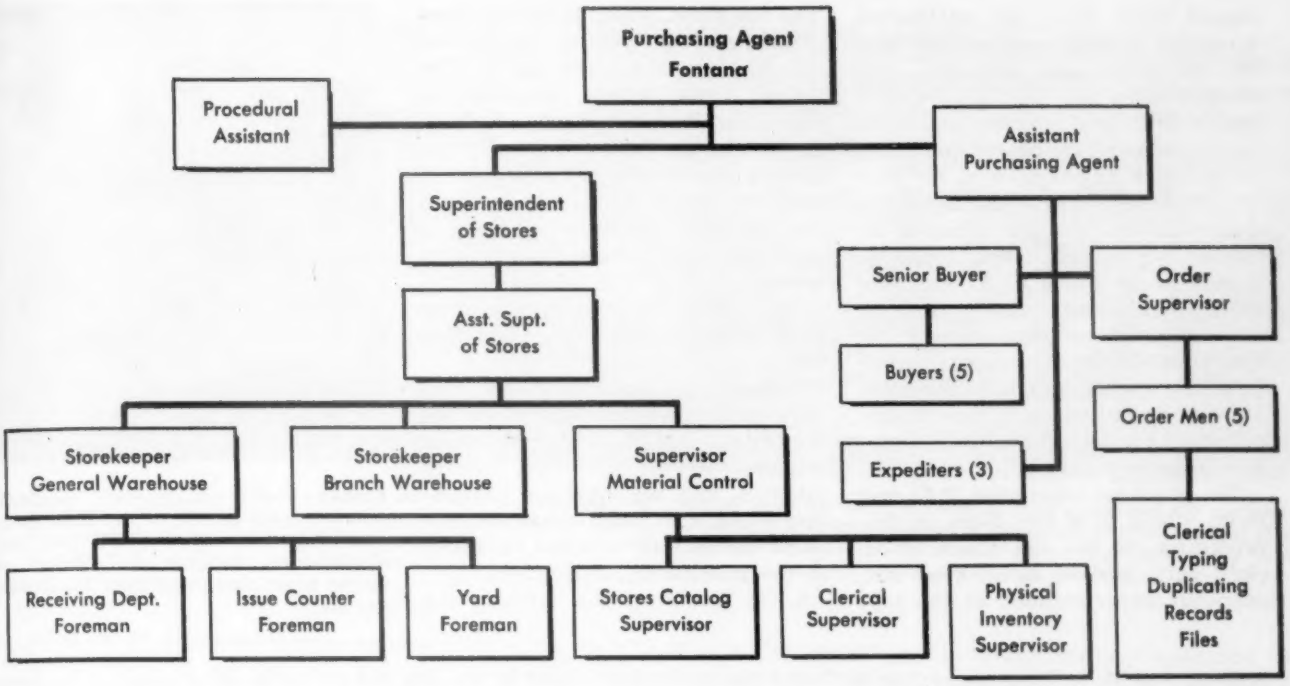


Purchasing for the mine at Sunnyside, Utah, is a separate responsibility within the General Purchasing Department. Scrap procurement is handled at the Oakland purchasing office. With major raw materials thus provided for, purchasing at the Fontana steelmaking plant is specifically responsible for equipment, parts and supplies to keep plant facilities in efficient, uninterrupted operation.

No Duplication of Effort

In this connection, we have successfully developed a purchasing and stores system based on the "one writing" principle, whereby the information originally entered on a purchase requisition eventually becomes part of a purchase order without transcription or other duplication of clerical effort.

Among the other advantages of such a system, its efficiency is attributable in many respects to the



The Purchasing Department at Fontana has the dual function of buying and control of material stores.

fact that it enables us to make effective use of the latest automatic electronic office equipment for sorting, listing, computing, and reproducing. In other words, whenever possible, information written on a form or punched into an IBM card, is used repetitively at minimum expense and with maximum accuracy.

As already noted, at this writing there are more than 60,000 items carried in our warehouse inventory stock. With few exceptions, they are requested, analyzed, cataloged, and ordered in accordance with the following procedures and methods. For purposes of illustration, we shall consider a new requirement, that may not have been already provided for in stock.

Standard Procedure

1. A "Request for Purchase" form, properly authorized, is received by our order department. This form indicates a need for operating supplies, steel products, spare parts, non-capitalizable tools or equipment, or raw materials not carried in warehouse stock. It also states whether the requested item or items should be stocked.

2. Order department personnel check the request form against a master catalog to determine whether any of the requested items are already in stock. When an item is on hand, the requestor is notified to obtain the article he requires by use of the regular material requisition form, from the stockroom.

3. When it is apparent that new products should be stocked in the warehouse, stock numbers are as-

Left, Tub files contain the master inventory record cards on 60,000 stock items. This record is posted daily from IBM records of receipts, orders, and disbursements, and provides the data for preparation of purchase requisition P. O. mats.

Right, Typists prepare purchase requisition P. O. mat forms from inventory records and requests for purchase. This single typing operation provides the basic "paper" for quotation requests, purchase orders, receiving reports, purchase and accounting records.

signed, stock levels are established, inventory control cards and bin tags are simultaneously prepared, new stock notices are sent to the IBM department, and entries are made in the master catalog for the items or facilities involved.

4. Inventory control cards for requested materials are grouped by similar or related items (four or five items to a group) to facilitate their procurement, and a typist prepares a *purchase requisition P. O. mat form.* One of these forms is prepared for each group, with the catalog description of each item transcribed to the form from the respective inventory cards.

The purchase requisition P. O. mat form, which is a key form in this procedure, is the top sheet of an eight-part, carbon interleaved set, snap-out style, stubbed at the top. The top sheet, which is the purchase requisition, is printed on Colitho No. 50 short-run paper-plate offset stock, from which reproduction copies can be made. Parts 2 through 7 are strictly carbon copies, comprising three two-part quotation requests — one for the vendor's use and file, and one to be returned to the purchasing department as a quotation. Part 8 is also a carbon copy, and is retained in the order department's purchase requisition file.

5. Inventory control cards that have been used in making up the requisition are then placed in or returned to the inventory record tub files, and the purchase requisition P. O. mat, with quotation request copies still attached, is taken to the purchasing department.

6. On receipt of this form in the

Kaiser's flexible multi-purpose purchasing system is made possible by duplicator equipment. Top sheet of the basic form, and supplementary headings, are printed on Colitho paper-plate offset stock for duplication use.

Specimen page of the Stores Master Catalog. Reverse side of the sheet is used for recording changes, so that these appear on the facing page when binder is opened.

KAISER STEEL CORPORATION

STORES MASTER CATALOG

PE18 - LEVELLER, HT-DROPRESS

STOCK NUMBER	DESCRIPTION	UNIT	CLASS	ALPHA	LOC	LINE	CATALOG NUMBER FACILITY	CATALOG NUMBER ITEM	ADD. LIST
	BEARING RADIAL FOR DRIVE			150		1	7518		
GS06 4240	B641840 LOWEY DWG 10862/371	EA		150		1	7518	2000	*
	IDLER FOR LEVELLER LOEWY DWG 10860			400		1	7518	2010	
PE18 4000	MK C LEFT HAND DP 4 PD 9 750/1000 39 TEETH 2 FT 1 1/8 IN LONG	EA		400	1	1 2 3	7518	4000	
	PINION FOR LEVELLER LOEWY DWG 10860			600		1	7518		
PE18 6000	MK A RIGHT HAND DP 4 PD 10 IN 40 TEETH 2 FT 6 IN LONG	EA		600	1	1 2	7518	6000	
PE18 6002	MK B LEFT HAND DP 4 PD 10 IN 40 TEETH 2 FT 6 IN LONG	EA		600	1	1 2	7518	6002	
PE18 6004	MK D RIGHT HAND DP 4 PD 8 750/1000 35 TEETH 2 FT 6 IN LONG	EA		600	1	1 2 3	7518	6004	
PE18 6006	MK E LEFT HAND DP 4 PD 8 750/1000 35 TEETH 2 FT 6 IN LONG	EA		600	1	1 2 3	7518	6006	
	SEAL OIL SINGLE STD			800		1	7518		
GS48 5614	4 SHAFT X 6 BORE X 1/2 GARLOCK 2561 OR EQUAL	EA		800	1	1 2	7518	7000	*
	SHAFT PINION FOR LEVELLER LOEWY DWG 10860			860		1	7518		
PE18 7600	MK F RIGHT HAND 3 FT 10 3/8 IN LONG DP 4 PD 8 750/1000 35 TEETH	EA		860	1	1 2 3	7518	7600	
	SLEEVE FOR AMERICAN ROLLER BRG NO EC G15 KSC DWG PB 608 MK I			880					
PE18-7800	$6\frac{877}{1000}$ OD x $6\frac{374}{1000}$ ID x 2 1/2 IN WIDE	EA		880	1			7800	

Left, Portion of the IBM department, showing the equipment on which inventory records are kept up to the minute, reorder points are automatically spotted, and purchase order quantity formulas are calculated. Right, Close-up view of representative stock bins. While the company operation is distinctly mass production, the purchasing department's specific problem is to provide and maintain unfailing supply of a wide variety of maintenance and replacement items, with actual buying in relatively limited quantities.

purchasing department, a purchase order folder is set up, and a two-part quotation request is mailed to each of three vendors selected by the purchasing department as being in a position to supply the requisitioned items. These quotation requests are prepared simply by typing in the names of the selected vendors, since the subject of the request has already been entered on the carbon copy of the original typing. Ordinarily, the three copies are sufficient. If more than three quotations are desired, the foregoing procedure is varied by preparing a quotation request form (heading only) on Colitho stock and using this in conjunction with the purchase requisition P. O. mat to reproduce the desired quantity of quotation request copies.

7. When all quotations have been received in connection with a given order, and accumulated in the purchase order folder, a vendor is selected, and the vendor's name, address, terms, unit price, promised delivery date, etc., is added to the face of the original purchase requisition P. O. mat. It will be noted that the original information and typing, which have already been used as a requisition and request to purchase, and for quotation requests, comprise some 75% to 80% of the data required to complete a purchase order — still without retyping — and therefore no more than 25% of data must now be added to the form to convert it to a purchase order in the purchasing department.

8. Enroute to the duplicating room, the purchase requisition P. O. mat passes through the general accounting department, where statistical coding is added to the face of the mat with a Colitho reproduction pencil.

9. Duplicate copies of the purchase order are prepared for (a) the requestor, (b) the purchasing department, (c) the accounts payable department, and (d) the vendor, the latter being signed by the purchasing agent. Then six material receipt copies (with price data omitted) are duplicated from the same mat and filed in the receiving department along with any blueprints and other records that may be required when delivery is received. These are for distribution as indicated in the following paragraph. Meanwhile, the original mat is retained in an open purchase order file, so that additional receipt copies can be prepared in the event that partial deliveries are received.

10. When a shipment is received, the six copies pertaining to the shipment are used by receiving personnel to record information that must be relayed to accounts payable, the requestor, the order department, and purchase order file, and other points where the data are required. If only a part of the merchandise covered by the order is received, an additional set of

Dead stock and obsolescence, major hazards in an extensive stores operation, are guarded against by periodic checks.

REQUEST FOR MATERIAL INFORMATION
ON ESTABLISHED WAREHOUSE STOCK ITEMS

Date / /

RMI No. 6100

To _____ Department _____

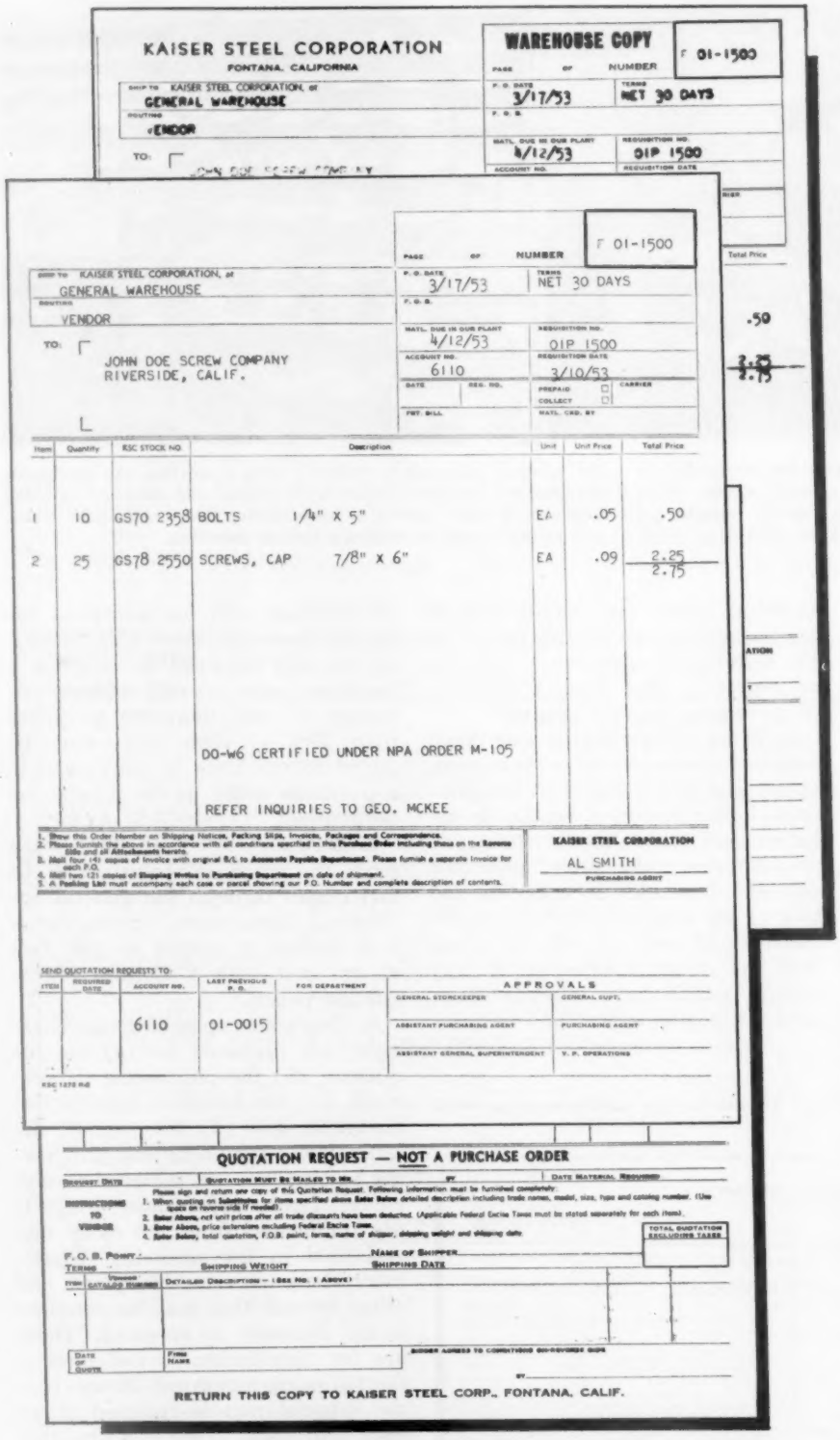
STOCK NO.	BALANCE ON HAND	P.R.	ORDER LIMIT	REF. NO.	P. O. COST	ACCUM. ISSUES FOR PERIOD

DESCRIPTION: | COMPANY DRAWING & NO | MACHINE PART USED ON

	YES	NO	REMARKS
Should Item Be Reordered for Stock?			
Will Old Part Be Repaired and Returned to Stock?			
Is Above Description and Attached Blueprint of Item Correct?			
Furnish Required Specifications on Attached Print.			
If Assembly, Be Sure All Component Parts & Mark Nos. Are Listed			
Will Present Usage Remain About The Same?			
Will a Cast ☐ or Fabricated ☐ Part Give Best Service?			
Are Any Engineering Changes Pending?			
Should Item Be Certified For Repetitive Purchase?			
Does Present Item Give Satisfactory Service?			
If Material Is Obsolete, Please Suggest Disposition of Balance On Hand.			

Information Furnished By _____ Date / / Drawings Checked By _____ Date / /

General Maintenance Approval By _____ Date / /



KAISER STEEL CORPORATION
FONTANA, CALIFORNIA

WAREHOUSE COPY

PAGE OF NUMBER F 01-1500

SHIP TO KAISER STEEL CORPORATION, at GENERAL WAREHOUSE
ROUTING VENDOR
TO: JOHN DOE SCREW COMPANY
RIVERSIDE, CALIF.

P. O. DATE 3/17/53 TERMS NET 30 DAYS
F. O. B.
MATL. DUE IN OUR PLANT 4/12/53 REQUISITION NO. OIP 1500
ACCOUNT NO. 6110 REQUISITION DATE 3/10/53
DATE REQ. NO. PREPAID COLLECT CARRIER
PKT. BILL MATL. CKD. BY

Item	Quantity	KSC STOCK NO.	Description	Unit	Unit Price	Total Price
1	10	GS70 2358	BOLTS 1/4" X 5"	EA	.05	.50
2	25	GS78 2550	SCREWS, CAP 7/8" X 6"	EA	.09	2.25

DO-W6 CERTIFIED UNDER NPA ORDER M-105

REFER INQUIRIES TO GEO. MCKEE

1. Show this Order Number on Shipping Notices, Packing Slips, Invoices, Packages and Correspondence.
2. Please furnish the above in accordance with all conditions specified in this Purchase Order including those on the Reverse Side and all Attachments hereto.
3. Mail four (4) copies of Invoice with original B/L to Accounts Payable Department. Please furnish a separate Invoice for each P.O.
4. Mail two (2) copies of Shipping Notice to Purchasing Department on date of shipment.
5. A Packing List must accompany each case or parcel showing our P.O. Number and complete description of contents.

KAISER STEEL CORPORATION
AL SMITH
PURCHASING AGENT

SEND QUOTATION REQUESTS TO:

ITEM	REQUIRED DATE	ACCOUNT NO.	LAST PREVIOUS P. O.	FOR DEPARTMENT
		6110	01-0015	

APPROVALS
GENERAL STOREKEEPER | GENERAL SUPT.
ASSISTANT PURCHASING AGENT | PURCHASING AGENT
ASSISTANT GENERAL SUPERINTENDENT | V. P. OPERATIONS

KSC 1270 Rd

QUOTATION REQUEST — NOT A PURCHASE ORDER

REQUEST DATE | QUOTATION MUST BE MAILED TO HIM | BY | DATE MATERIAL REQUIRED

INSTRUCTIONS TO VENDOR
Please sign and return one copy of this Quotation Request. Following information must be furnished completely:
1. When quoting on Substitutes for items specified above Enter Below detailed description including trade names, model, size, type and catalog number. (Use space on reverse side if needed).
2. Enter Above, net unit prices after all trade discounts have been deducted. (Applicable Federal Excise Taxes must be stated separately for each item).
3. Enter Above, price extensions including Federal Excise Taxes.
4. Enter Below, total quotation, F.O.B. point, terms, name of shipper, shipping weight and shipping date.

TOTAL QUOTATION EXCLUDING TAXES

F. O. B. POINT NAME OF SHIPPER
TERMS SHIPPING WEIGHT SHIPPING DATE

ITEM	DESIRED CATALOG NUMBER	DETAILED DESCRIPTION — (SEE NO. 1 ABOVE)

DATE OF QUOTE | FIRM NAME | BIDDER AGREES TO CONDITIONS ON REVERSE SIDE
BY

RETURN THIS COPY TO KAISER STEEL CORP., FONTANA, CALIF.

Original typing of the purchase requisition P. O. mat form sets the procurement in motion, providing carbon copies for requesting quotations and receiving acknowledgements from three bidders, and a warehouse file copy. Information entered at this time (about 80% of the total) need not be transcribed or retyped at any point in the processing of the purchase. Clerical work is held to a minimum, and complete accuracy is assured.

receipt copies is reproduced for use when the supplemental shipment arrives.

If it becomes necessary to change data on a purchase order after copies of the order have been duplicated and distributed, such as changes in quantity or price, considerable time and money are saved by making use of a change order variable form printed on Colitho stock. Change data typed on the latter form are duplicated in conjunction with the original purchasing requisition P. O. mat so as to produce a purchase order change order copy set, which is distributed to the same persons and groups who received copies of the original purchase order.

Stock Replenishment

Our inventory control system involves the use of IBM tabulating machines in producing the aforementioned master catalog, in maintaining inventory records, in processing all inventory activities, and in furnishing transfer posting tapes which are used to produce stock and order history cards. The latter cards are chronological lists of all transactions for each stock item.

Ordering to replace stock requisitioned from the warehouse is controlled by an inventory formula, computed by machine in general accord with the following major factors:

a. Accumulated issues from stock, up to 18 months.

b. Average monthly consumption, calculated from the previous figure. (AMC)

c. Procurement time, including internal time for processing the order plus supplier's lead time and time in transit. (PT)

d. Low limit stock policy, in months. (LLP)

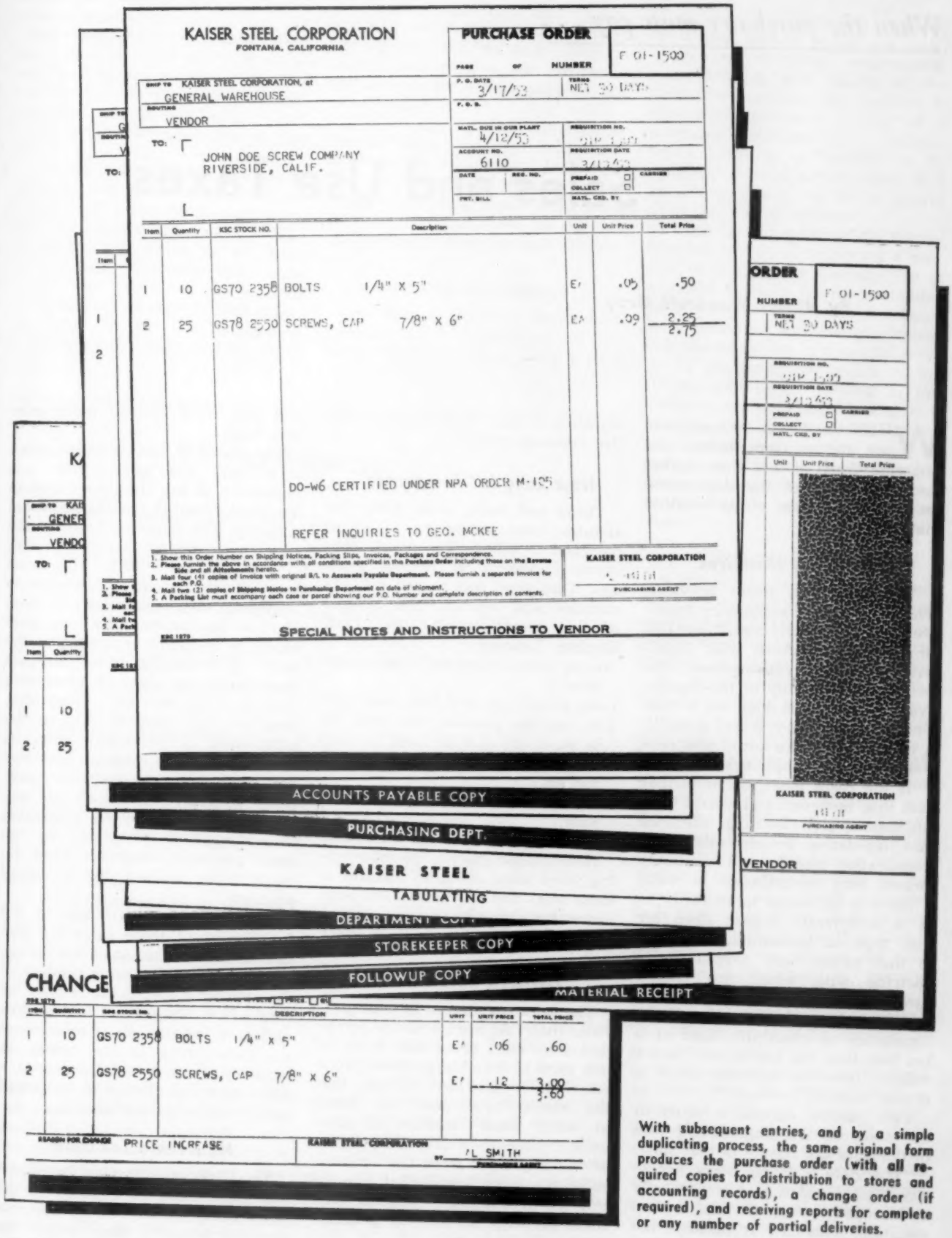
e. High limit stock policy, in months. (HLP)

From these factors, the order point is computed by the formula: LLP x AMC + PT.

Similarly, the order quantity is computed as: HLP x AMC — Total on hand and on order.

Our inventory records are brought up to date daily by providing the IBM department with copies of all papers (such as material requisitions and material receipts) which indicate inventory increases on reductions, so that information regarding the current inventory status of each stock item can be punched into a card for that item. Then, as the cards for various items are processed, the IBM equipment automatically checks the number of units on hand plus the number of units on hand for each card. If the total is equal to or less than the order point, the machine subtracts the total from high limit stock policy times average monthly consumption, and registers the computed order quantity. The latter figure is mechanically printed, along with the appropriate stock number, on a paper which is sent to our order department.

If the inventory record for the stock number under consideration shows no highly irregular or un-



With subsequent entries, and by a simple duplicating process, the same original form produces the purchase order (with all required copies for distribution to stores and accounting records), a change order (if required), and receiving reports for complete or any number of partial deliveries.

usual transactions, a typist is instructed to prepare a purchase requisition P.O. mat for the procurement of replacement stock. Otherwise, a request for material information is sent to appropriate utilization points throughout the plant, so that the IBM computation can be either confirmed or corrected prior to making the purchase.

Corrections are few, and in general they serve to strengthen our confidence in these automatic control methods, for they are generally attributable to the fact that the IBM machinery was provided with inaccurate or misleading information.

When the purchaser must pay . . .

Sales and Use Taxes

By *Albert Woodruff Gray*

WHEN the South Dakota sales tax statute came before the Supreme Court of that state during the dark years of the depression, for a determination of its validity, that court said:

Emergency Measures

"The statute in terms provides, 'This act being an emergency measure shall expire and stand repealed on the 30th day June, 1935.' Manifestly where the constitutional criterion of the validity of the legislative act is whether such act is reasonable or arbitrary, a fact question is involved and the social and economic situation becomes material.

"If the cases mean to go further than this, however, and intend their language to give rise to an inference that legislative action which the Constitution clearly and definitely forbids, may nevertheless be valid if there is or seems temporarily to be a sufficiently urgent need for that type of legislation, then and to that extent they promulgate a doctrine with which we cannot agree.

"If it is beyond the power of the legislature to enact this kind of a tax law, then the law cannot derive validity from the fact that there is urgent need of revenue."

Two months earlier, a court in the state of Washington had said of the sales tax statute in that state:

"The state is facing stark necessity. The legislature has earnestly endeavored to meet this critical situation. This law is perhaps not perfect. No tax law yet devised has been entirely fair and just to all in its particular workings. This is an emergency measure limited by its terms to a two year period. If it works injustice to some it will be but temporary, and such temporary injustice, if any, must be borne for the common good."

How Long is "Temporary"

These and many other sales tax statutes were temporary measures designed to relieve the instant economic hardships of twenty years ago. That need has passed but the statutes still remain, the subject of the verses of the late Prof. Stephen Leacock,

Jimmy went crazy with taxes and debt
Long years ago, and he's crazy yet.
You see for yourself the state he is in.
He's crazy—he thinks he's rebuked for sin.
He shouts with a martyr's ecstatic pain,
"Tax me again, Lord, tax me again."

Nevertheless during the intervening years some essential features of these sales and use taxes have been channeled by the courts into a fairly uniform pattern in their effect.

Defining Retail Sales

The sales tax statute in Ohio provides that, "An excise tax is hereby levied on each retail sale made in this state of tangible personal property." It is provided further that the words "retail sale" or "sales at retail" shall "include all sales except those in which the purpose of the consumer is to use or consume the thing transferred directly into the production of tangible personal property for sale by processing."

A sales tax assessment of $525 was made on the sale of a crane for $17,500 to a company engaged in producing asphaltic concrete for road surfacing. The sole function of the crane was lifting the sand and slag from cars or stock piles into bins.

The Board of Tax Appeals in that state held the sale within this exemption of the statute — used in the production of tangible personal property. The Supreme Court of the state, in reversing this ruling said,

"The distinction which this court has logically drawn in reference to transport instrumentalities is that if such instrumentalities are used solely to transport materials to the point of processing or to transport them from the place of processing after that has been fully completed, they are not used directly in the production of processed property, whereas if such instrumentalities are used solely to transport partially processed materials to another location where the processing is continued or completed by the same processor, they are used directly in the production of processed property."

The underlying principle in the functioning of these sales tax statutes is that the tax shall not be imposed twice on the same product. If the product is sold to the retailer for resale it is not subject to tax providing it retains its existence as the same thing in the resale. If, however, it is transformed into a different thing, then it is consumed and the sale is taxable.

No Double Taxation

The Utah sales tax law is in part that there shall be imposed "a tax upon every retail sale of tangible personal property made within the state of Utah, equivalent to 2% of the purchase price paid or charged," and further that, "The term *retail* means every sale within the state of Utah by a retailer or consumer except such sales as are

defined as wholesale sales or otherwise exempted."

Sales aggregating $1,745.31 were made by a concrete products company to highway construction contractors and were claimed exempt from this tax as not being "retail sales" within the definition of this statute.

"Contractors purchase the pipes, culverts and cinder blocks for the purpose of using and consuming them by incorporating them as one of many units which go to make up buildings, structures and roads, as the case might be, and not for reselling them as such in their original form but for the purpose of changing their very nature from personal to real property," said the Utah court in sustaining this assessment.

"In short, labor and many other materials enter along with the manufacturer's products, to make up the particular structure, and they are all used or consumed in the process of producing a new entity."

While the distinction made here by the court is clear, between a sale subject to tax and one (as in this instance), where the identity of the product is changed by processing, nevertheless a conclusion directly opposite to this has been adopted by the courts in Arizona, Maryland, Missouri and other states, in which property purchased for highway building and construction is held to be a sale for resale and not one for consumption by the contractor.

This divergence in the interpretation of these statutes should serve to draw the attention of both sellers and purchasers to the added expense in some states from sales and use taxes imposed on the use of material in highway construction.

Services Are Exempt

One feature in these laws which remains fairly consistent in all states, however, is that while a sales or use tax may be imposed on the sale of material, its burden is not cast on the sale of services or on sales in which the materials are merely incidental and the essential item is the rendering of service.

A machine manufacturer in Illinois undertook the construction and sale of a special milling machine designed for milling the inside surfaces of the main bearing supports of a new type of motor, under a contract in which the price of $29,192.40 had been agreed upon.

The court in that state, refusing to sustain the assessment of a sales tax on this transaction and holding the contract to be one for the sale of services in which the machine itself was merely incidental, said,

"In the ordering, engineering, manufacturing and selling of the particular machine, the situation is somewhat analogous to that of a purchaser ordering from a contractor a house or a building to be constructed upon certain lines of a particular design, to do a special thing for the purchaser.

"Here the occupation of the manufacturer is that of rendering a service of skill in the manufacture of a special machine for the particular and exclusive use of the purchaser for a particular and special purpose. It is the rendering of a special service to the purchaser which is the subject and object desired in the instant case. It is not the sale of a machine but it is the manufacture of a special machine for a special purpose and a sale is not taxable where it is merely incidental to a special service rendered the purchaser."

Interstate Sales

A further feature of the exemption of payments made for services, under many of these statutes, appears in a situation involved in another and recent Illinois decision.

A corporation engaged in the manufacture and selling of machinery and machine tools in Detroit, Michigan, sold its products to manufacturers' agents in Illinois. All contracts and orders were accepted at the home office in Michigan and the only activity of the Illinois representatives was the forwarding of the orders of the buyers for acceptance and the collection of the commissions on goods shipped f.o.b. Detroit in filling these orders.

Suit was brought by this Michigan manufacturer against the Illinois tax authorities to recover $7,154.12, that had been paid by it in taxes on sales of this character. The Illinois court in its decision of this action, said,

"When the representative obtained an order from the prospective customer, his authority in reference to the order was at an end. The orders obtained by its representatives were no more than a proposal of the purchaser to buy upon terms to be determined and agreed upon. These matters as well as the consummation of the sale and delivery of the article occurred in another state. Under such limited authorization from the manufacturer to its representatives we find no basis for concluding that the manufactur-

(*Please turn to page* 344)

REFERENCES

State v. Welsh, 251 N.W. 189, S.D.

State v. Yelle, 25 Pac. 2d 91, Washington

Tri-State Asphalt Corp. v. Glander, 90 N.E. 2d 366, Ohio

Utah Concrete Products Corp. v. State Tax Com'n., 125 Pac. 2d 408, Utah

Ingersoll Milling Machine Co. v. Dept. of Rev., 90 N.E. 2d 747, Illinois

Ex-Cell-O Corp. v. McKibbin, 90 N.E. 2d 505, Illinois

Oklahoma Tax Com'n. v. Stanolind Pipe Line Co., 113 Fed. 2d 853

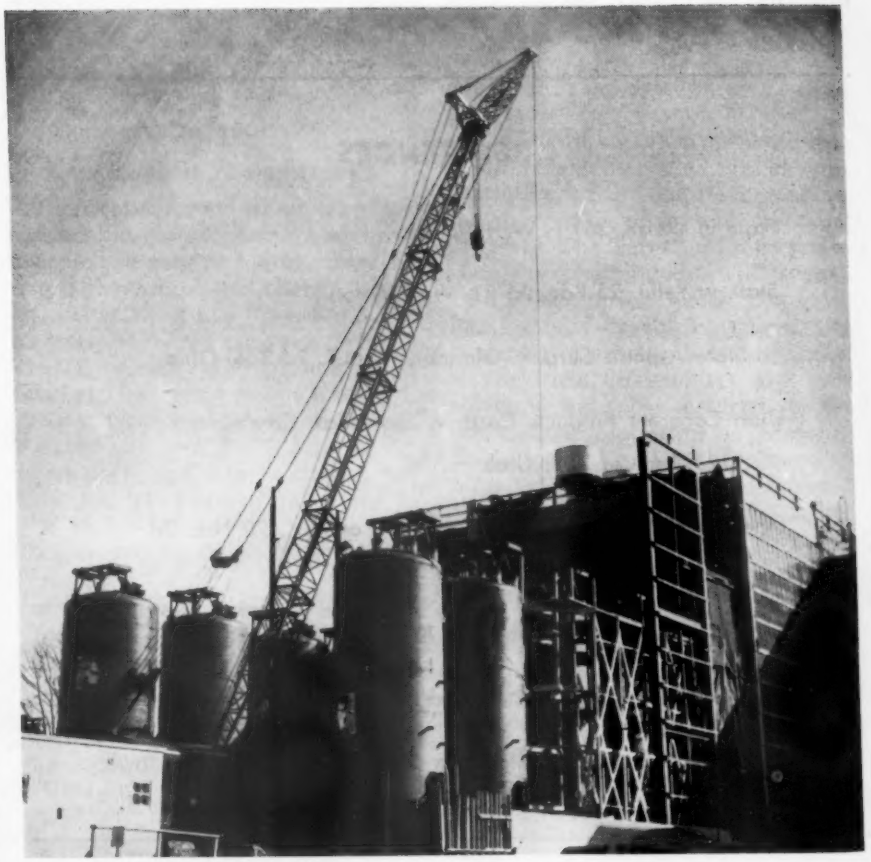
Morrison-Knudsen Co. v. State Tax Com'n., 44 N.W. 2d 449, Iowa

Important savings through specialized purchasing service

Equipment Buying

By Harry Mitnick

Equipment Buyer, Purchasing Department
E. R. Squibb & Sons
New Brunswick, N. J.



Expeditious procurement of equipment and facilities permits production and income to start earlier, representing increased profits for the company. These antibiotic fermentation tanks at Squibb's New Brunswick plant were in operation, with canvas housing and a temporary catwalk, weeks before the steelwork for the building was erected.

THE procurement of machinery, equipment, piping, and similar facility requirements by a specialized buyer or assistant purchasing agent, in the purchasing department, is a comparative innovation. To those firms that had not previously followed this practice, World War II drove home a point: The purchase of this class of requirement by engineers, production or maintenance men, and the subsequent assignment of an order number and mere rubber stamping by one of the purchasing men, did not, in most cases, serve the best interests of the company. It is the purpose of this article to set forth the advantages and functions of an Equipment Purchasing Buyer or Group.

The Equipment Buyer should be technically trained, but in the absence of such special training, a competent buyer with broad mechanical aptitude can fill this post with distinction and profit. One buyer can usually handle the volume of a good sized ($50 million to $100 million annual business) company spending an average of $1 million to $1.5 million annually for new facilities and hitting up to $5 million in peak years. Full time secretarial assistance is a "must", and a large volume of relatively small orders may require the help of an additional girl.

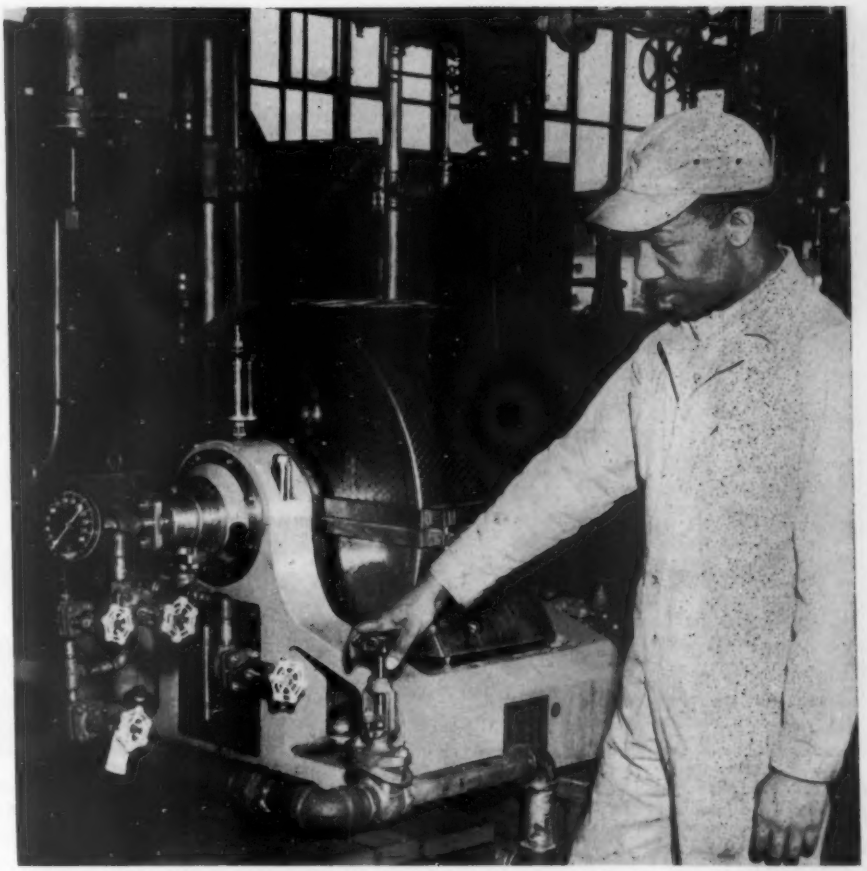
The purpose of specialized equipment buying is to purchase more efficiently and effectively, and thus to save money. Competent purchasing saves on the purchase price and saves much engineering time. Increased income resulting from improved project completion dates or on-time start-up of new labor saving machines comes as a bonus on top of other savings.

Applying Purchasing Principles

It has been found in many of the firms where such purchasing was done by engineers, and only rubber stamped in the Purchasing Department, that competitive buying was virtually unknown. Reliance was placed entirely on negotiation with a favored supplier, and the company was not in a favorable position to negotiate under these circumstances. The purchasing man was powerless to do anything about this condition, since he had never established the necessary contacts and had not yet demonstrated to management that he could do much more than wield the stamp.

The fact is that many of the smaller pieces of equipment can be handled almost entirely by the

SUMMARY: The purchase of technical production equipment and facilities has traditionally been reserved to the technical personnel, at the sacrifice of adequate and expert attention to the commercial phases. There are many direct advantages to be gained from handling such procurement through normal purchasing channels, with a competent equipment buying specialist. These range all the way from first cost and delivery factors, economies in maintenance and use, to ultimate disposition of the equipment. With today's acute shortage of technical personnel, the increase of engineering productivity, released from purchasing time and responsibility, is another contribution of major importance. Equipment buying offers the purchasing department a challenge and opportunity for greater profit-making service to operating departments and to over-all company management.



Equipment purchases typically represent a major expenditure and investment of company funds. This Podbielniak Extractor, used in manufacturing penicillin, cost $22,679.80 in 1950. Expenditures of this magnitude warrant the most competent attention to purchasing techniques, as well as technical details.

equipment buyer. In this category are pumps, compressors, blowers, agitators, heat exchangers, pressure vessels, storage tanks, corrosion resistant piping and valves. These will be recognized as items that are available from many sources. Various types of industrial instruments and piping specialties of all sorts are classes of equipment which can also be handled by the equipment buyer with a minimum of assistance from engineering, provided that a properly prepared, complete requisition is submitted.

For example, let us consider the purchase of a pump. From the flow sheet, the engineer determines the head, capacity, and lists these facts on a requisition, as well as the fluid, temperature, specific gravity, and any other pertinent data. The equipment buyer then calls in salesmen of representative manufacturers in the field and requests quotations, in duplicate, on the basis of the information submitted. In the matter of quotations, the buyer receives valuable assistance from the equipment sales representative and sales engineers, and we take this opportunity to put in a word of appreciation for their helpful services.

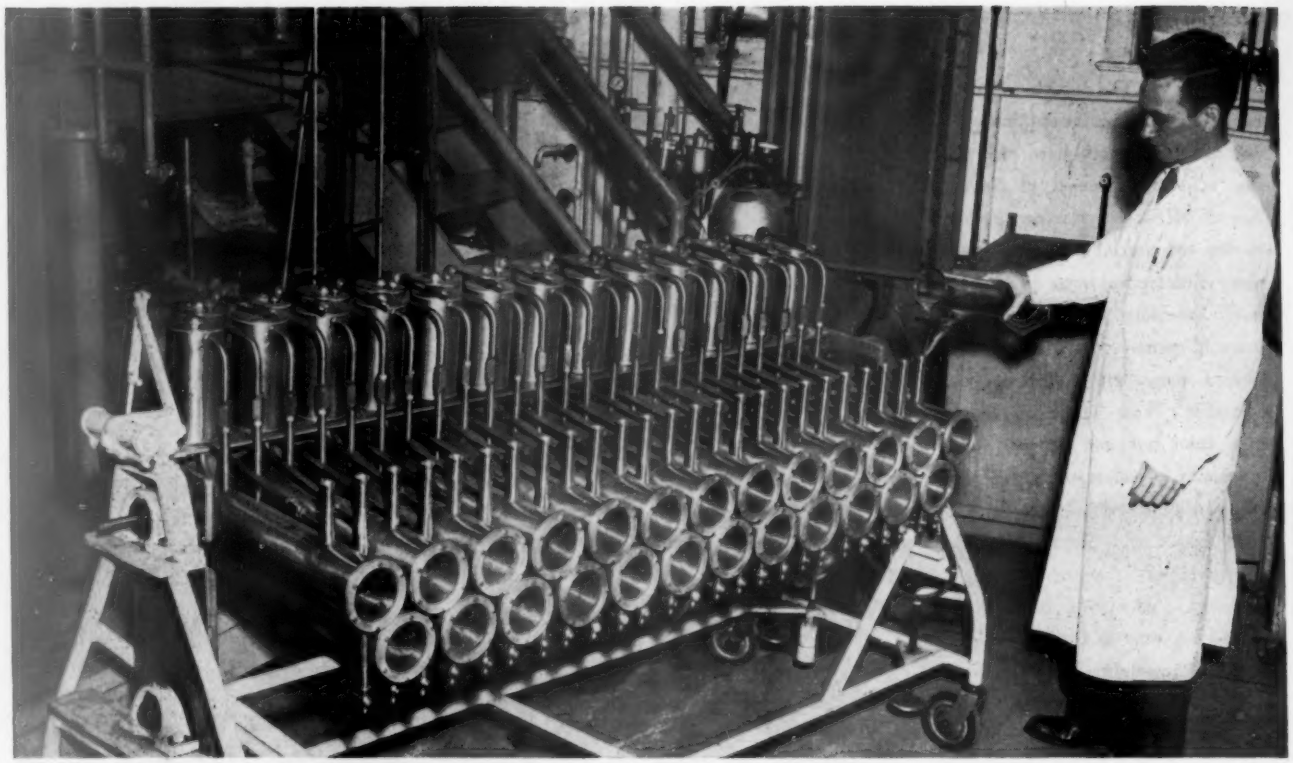
A copy of each quotation is passed on to the person who prepared the requisition. From an analysis of the proposals, the buyer makes a selection and calls the requisitioner for his reaction. If both agree, the buyer places the order, if there is a difference of opinion, it is resolved to the satisfaction of both. Obviously, the technical requirements must be met in all quotations. The Purchasing Department selection is made on the basis of price, delivery, and quality, with first cost carefully weighed against ultimate cost. Thus we effect the first saving.

It is evident that the time spent by engineers and other technical personnel in interviewing salesmen is reduced to a minimum, although the door is always left open for conference and for the Purchasing Department to refer really good new ideas to interested departments throughout the entire plant. It has been found that the salesman himself prefers this arrangement. He knows that it works both ways. He knows that the equipment buyer will also refer him to any individuals in the plant who need help, and that it is not necessary for him to spend hours trying to see six or eight possibly interested people, when only one or two actually want to see him.

Special Considerations

The buying of production machinery and equipment — tools, if you will — demands a different perspective from the buying of maintenance and operating supplies, or production materials, or container materials. It demands a fresh, broad, company-wide perspective. The equipment buyer must remember that improved delivery means earlier start-up of a new process or expanded schedules. Earlier start-up means increased earnings. These increased earnings may very quickly make up for an overpayment of a thousand dollars or even more to obtain a piece of essential equipment promptly.

There comes to mind a recent example. A special type of stainless steel filter press would eliminate the need for two operators per shift (24 hour operation), or effect a saving (including shift differentials, overtime, etc.) of approximately $5,500 per month, or $66,000 per year. Due to procure-



Many of the phenomenal advances in medical and pharmaceutical products have required complicated special research equipment in their development. Here is a Craig Distribution Apparatus, recently purchased for Squibb's Chemical Development Department.

ment difficulties of the supplier, the accumulation of all the special sizes of stainless bars required would result in a six-months delivery estimate. By authorizing the fabricator to buy larger sized material from available stock and machine it down to the correct size, the delivery promise was trimmed to three months. Although the increased cost amounted to $1,600 on a $6,400 piece of equipment, the extra cost will be neutralized during the first week of operation, and the net saving for the three month delivery improvement will be: 3 x $5,500 — $1,600, or $14,900.

Here we see that equipment buying also calls for a bolder approach. Without losing sight of the time honored criteria of price, delivery, and quality, which have guided the purchasing agent ever since he became a recognized individual in modern business, the equipment buyer must make sure that he does not become penny-wise and pound-foolish, and he must add to the other three factors a fourth consideration. He must not be afraid to spend a little more of his firm's money if the end can be shown to justify the means.

The problems of container and production material procurement concern themselves mainly with keeping on hand sufficient quantities to guarantee a rate of finished goods production consistent with sales department efforts. Occasionally this brings the buyer into a race against time, particularly in periods of shortages; but his battle is usually with the dollar sign, because he is in the front lines when it comes to keeping the price of his company's product competitive. The equipment buyer is also in the front lines, but he is *always* fighting time. Even in normal times, no matter how soon the equipment for a new project can be assembled, management wants it sooner.

This is not hard to understand, since, having made the decision to spend some money on facilities for a new product or labor saving device, they want it put into operation at the earliest possible moment. This constant fight against time compels the equipment buyer to call forth a high degree of ingenuity and initiative, for example, in the development of effective techniques in follow-up and expediting. (These, by the way, are not the same; the former is self-explanatory, while the latter may be defined as "the isolation and breaking of bottlenecks".)

Reaching an Agreement

As stated previously, the needs of the requisitioning department must be communicated to the buyer. This may be by formal requisition, memorandum, or even by a telephone call, but regardless of the means employed, the specification must be complete. The equipment buyer examines the specification to see if any details require clarification. Engineers occasionally get carried away by their slide rules and come up with rather strange requirements, some of which it may not even be possible to purchase. An experienced buyer will immediately spot odd dimensions, unusual electrical characteristics, too special materials, or other unknown items. He should then contact the requisitioner to see whether a more standard specification would be acceptable.

With the clarification of the requisition, the buyer solicits quotations from qualified, reputable suppliers, and begins the matter of preorder adjustment and negotiation. This might include the resolving, sometimes with Legal Department assistance, of (for example) conflicts in the terms and conditions of sale expressed by a prospective seller, as compared with the standard terms on the buyer's purchase order. At this time there may be considered the integrity of the supplier. Earlier we said that "qualified, reputable" suppliers were called in, but equipment buying, particularly in the purchase of specially designed machinery, sometimes requires dealing with the

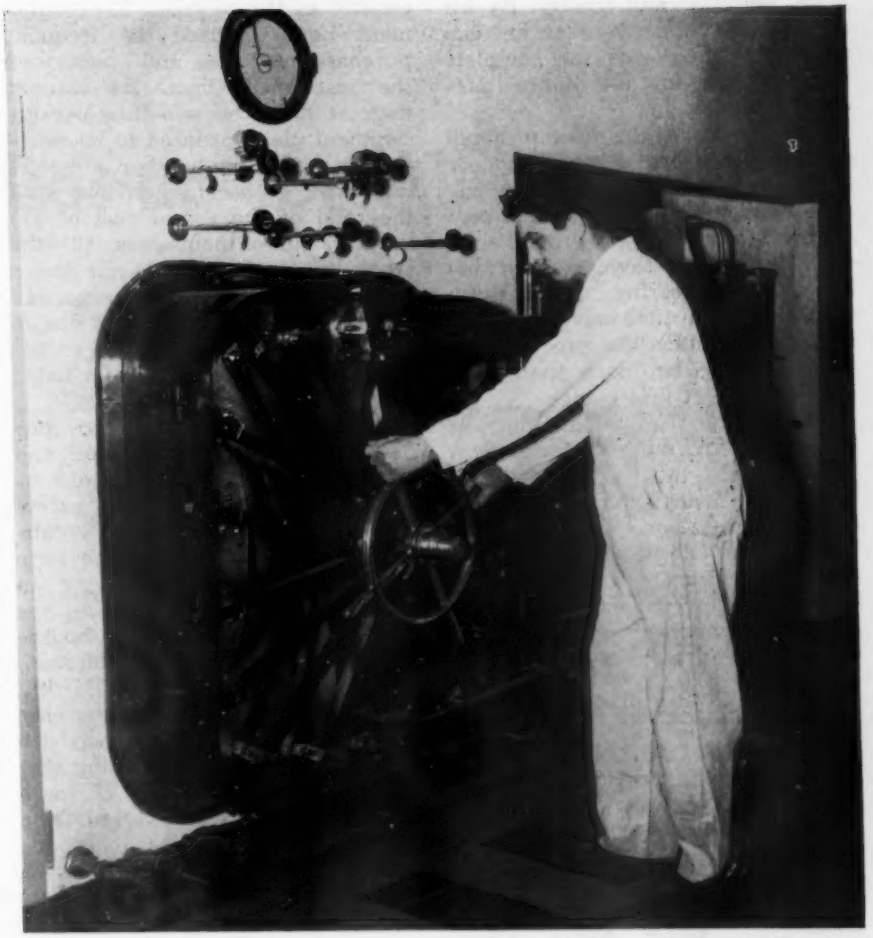
smaller and less well known firms. With all due respect to them, they are sometimes inclined to be over-optimistic as to ability to design and ability to meet delivery schedules.

A credit rating may be requested on the prospective supplier of all large orders and any special smaller ones. Patent protection clauses must be adequate. Terms of payment, cash discounts, shipping costs and other points may be taken up.

There is, too, the matter of the "personality" of the supplier and how he operates. This is hard to define, but we all know that notwithstanding the willingness and cooperation on the part of the individuals we deal with in various firms, some companies are just more difficult to do business with than others.

Failure to reach agreement on any of these factors, to the best interests of the customer, may be serious enough to justify the buyer's rejection of the bid. Yet in many cases, the engineer paid them scant attention and the rubber-stamp buyer couldn't do much about them either since, by the time the facts were evident to him, the commitment had already been made.

Having reduced all quotations to a common basis, or noting the exceptions in specific cases, the equipment buyer submits copies of all quotations to the requisitioner, and the procedure described in the (pump) example is followed. It must be emphasized that this will not work for all types of equipment. Large specially designed units, intricate machinery, complicated systems, etc., are still handled best by direct contact between the sales representatives and design engineers. Even in such cases, however, the equipment buyer should sit in on conferences and should obtain a copy of each quotation, so that he may make a recommendation based on the commercial considerations of the transaction. Final selection in such cases is reserved to the requisitioning department.



Autoclave used for sterilizing equipment used in the manufacture of Streptomycin. Procurement of equipment like this is essentially a matter of purchasing, once the requirement has been defined. Handling it through the Purchasing Department usually results in more advantageous procurement, and increases engineering productivity by relieving technical personnel of interview time and procurement detail.

Servicing the Order

With the placing of the order begins the job of servicing the order. Some firms refuse purchase orders on the customer's form and demand that their own sales contract be used, while others acknowledge the order using printed terms and conditions some of which may disagree seriously with the terms and conditions on the purchase order. These must be evaluated in the light of the size and complexity of the order and, if necessary, reconciled to the satisfaction of both customer and supplier.

Proper order servicing includes prompt referral to the Engineering Department of blueprints submitted for approval; re-transmittal to supplier may be made by requisitioner with a copy to Purchasing, or by Purchasing based on an inter-office memo from the requisitioner giving the equipment buyer facts necessary to transmit. It should be noted that the often necessary prodding of the requisitioner for prompt examination of such material is done by the equipment buyer and is one of the details of expediting.

Order servicing includes the negotiation of price changes made necessary for various reasons—design changes, quantity reduction, etc. However, most of the effort will be in the direction of the battle with the calendar, and spent in follow-up and expediting. The matter of follow-up and expediting techniques is a separate subject in itself, and cannot be further expounded here, but it must again be emphasized that in equipment buying, as in no other phase of purchasing, the development of intelligent, effective methods is of the greatest importance.

Cancellations and cutbacks are a subject we don't like to talk about, but we all have them occasionally. Regardless of who made the commitment, this bit of dirty work usually lands on the desk of the buyer who signed the order, since it is a matter for negotiation, and the Purchasing Department is supposed to be the best bunch of horse traders.

On those occasions when it may be to the best interest of the company to consider the second-hand market, the equipment buyer would seem to be better equipped than the engineer to handle this special type of procurement.

Active participation by the equipment buyer in the preliminary development, pre-order adjustment, negotiation, actual commitment, order servicing, and post-order adjustment is much more than mere selection of the best compromise of

price, delivery, and quality. By his ability and effectiveness, he can show that he merits the complete responsibility for the entire purchasing operation.

The removal of this mass of detail from the concern of the engineer obviously saves much engineering time, and since engineering personnel is today in very critical supply, the actual savings from increased engineering productivity resulting from time saved by not having to handle the procurement function may be more than they appear to be at first glance.

Specialized equipment buying gives the Purchasing Department a potent means to give real service, both to top management and to the operating divisions of the firm. By the savings it effects, it operates directly to increase the rate of return on the investment in the Purchasing Department personnel, office space and machines.

Replacement Parts

Purchase of repair and replacement parts for machinery and equipment is handled most effectively by the buyer who bought the original equipment, because of his greater familiarity with details. There are fewer calls back for more information, fewer delays. From time to time this results in opportunities for the equipment buyer to do a unique and constructive job by coordinating the purchase of new equipment with information learned in the purchase of replacement parts. In large organizations, having separate Engineering and Maintenance Departments, Purchasing is the only spot where such coordination can take place constantly.

Perhaps an example will illustrate: A rotameter is an instrument which measures the rate of flow of fluid materials (liquid or gas) by passing them through a vertical glass tube so that a float in the tube will rise as the rate of flow increases; calibrations showing rate of flow are etched into the tube, as on a clinical thermometer.

Due to the number of variables—temperature, pressure ranges, estimates flow range, the fluid itself—very few tubes had identical calibrations although there are only ten different sizes. As the tubes are glass and the float, fittings, and housings are metal, a certain amount of breakage is to be expected. Accordingly, as soon as a new meter arrived, the instrument maintenance man, to assure uninterrupted operation, immediately requisitioned two new tubes, calibrated and etched exactly as the original. The equipment buyer noticed the frequent purchase of tubes and questioned the instrument man. He learned that, at first, the two-tube-per-instrument plan appeared to be satisfactory, but as the number of meters increased, it became obvious that the total of the actual cost of (1) the two tubes themselves, (2) the space to store them, (3) the losses from breakage while in storage, and (4) the obsolescence of tubes due to process changes, resulted in an almost fantastic annual cost for using this type of meter.

The equipment buyer then consulted the meter salesman, and learned that the meters could be supplied with tubes blank except for a reference or index mark, calibration being supplied in the form of a metal scale, also having an index mark to match that on the tube, much like the common household thermometer. The additional cost was very slight, about 5%, but since the blank tubes came by size, it was possible to stock, say six tubes for all the meters using that size tube. Thus the ratio of spare tubes to meters was reduced from two tubes per meter to about one tube for every five to ten meters. The actual reduction in number was from almost 1,500 tubes to fewer than 100, with the consequent saving in investment and space cost. Waste due to obsolescence was completely eliminated.

This, of course, necessitated standardization on one brand of meter, since the tubes of different manufacturers are not interchangeable, but the worthwhile saving warranted this, even taking into consideration the fact that competitive buying of these meters from alternative sources is no longer feasible.

Equipment Records

Specialized equipment buying also helps increase service rendered by the Purchasing Department as a result of the various files maintained. The equipment buyer must have for his ready reference, and consequently available for the ready reference of others, a master catalog file. This can save space in other departments by the elimination of their private catalog files when they find they can depend on the Purchasing Department master file. The accumulation of bits of seemingly irrelevant and disconnected facts into a "Technical File" has on occasion turned out to be quite worth the effort; leaflets and pamphlets on new plastics, new alloys, new types of pumps, etc., are classified into this file.

Another file, a by-product of equipment purchasing and one which justifies its existence in spite of the present trend toward elimination of unnecessary papers, is the "Master Equipment File". In it is kept a complete case history of each major piece of equipment purchased, starting with the original quotation and including all the pre- and - post - order correspondence, shipping notices, etc. Major changes in characteristics, large overhaul jobs, and similar operations are noted on the case history. This file has proved very valuable in the event it is decided to dispose of any machine.

These three files tend to make the Purchasing Department a sort of information bureau, a very worthwhile service to the whole company.

In the disposal of surplus equipment, the equipment buyer's contacts in the second hand market are very valuable, and conversations with salesmen sometimes provide tips about new plants or other buyers who may be looking for just the machine he has for sale. This may permit the equipment to be disposed of more advantageously than otherwise. In short, the equipment buyer moves in the proper circles to carry out this assignment most effectively.

It is axiomatic that the fundamental responsibility for all vendor contacts and relationships is vested in the Purchasing Department, and the equipment buyer helps preserve the integrity and consistency of this policy. The actual negotiation and purchase of equipment represents quite a challenge, but as a business grows and its needs grow, management must be willing to issue this challenge, and the Purchasing Department must rise to the occasion and be ready and able to accept and fulfill it with distinction.

The satisfactory and effective discharge of these responsibilities earns for the equipment buyer — and thus for the entire Purchasing Department — a feeling of respect from the Engineering, Production, and other departments he serves, and thus helps increase the overall prestige and stature of the entire procurement function. Under these circumstances, Purchasing is welcomed to the management round table, and is better able to perform another important function, that of being "advisers to management".

Revised set-up for Allocations

By A. N. Wecksler

PRINCIPAL remnant of the detailed controls program developed during the mobilization period that followed outbreak of war in Korea, is the materials allocation program.

Price, wage and end product controls have been abandoned, and the several agencies created to administer the controls programs either have been completely dismantled or are operating on a token basis. Some continue in operation for the purpose of maintaining a standby organization, and some for political expediency, as in the case of the special aids to "small business".

National Production Authority, which originally was formed out of the Department of Commerce and which always remained as a part of it, even though operating virtually independent of Commerce direction, has been spliced back into the Commerce Department.

The materials control program under which 12 months ago virtually all supplies of steel, copper and aluminum were controlled from the mine to fabrication and then on into scrap, has been discarded. The Controlled Materials Plan has been replaced by the Defense Materials System.

Basically there are two questions about the new approach to controls which concern the purchasing agent —one, which Government agency will administer the controls program, and what the policy will be. The second is the nature of the controls program, its organization, and its method of operation.

Secretary of Commerce Sinclair Weeks has announced that the controls functions of the National Production Authority will be handled in the Commerce Department by a Business Services Administration, consisting of a number of commodity divisions—similar in some respects to the National Production Authority.

Functions of the Business Services Administration, as visualized by Secretary Weeks, will be:

Commerce Secretary Sinclair Weeks

Department of Commerce resumes control functions of the National Production Authority, through commodity divisions in the Business Services Administration.

1. Continue production directives and allocations of materials for defense and atomic energy.

2. Service the respective industries with specific information. Today a businessman with a problem often is puzzled as to the proper Federal agency to contact. Under the new proposal, he would contact his industry division and be offered the facilities of the Commerce Department, or be directed to the appropriate agency in some other department of the Government.

3. Secure the cooperation of all industries in a mobilization base and post-attack program. . . It is planned to conduct this phase of defense so that, wherever possible, industries themselves will obtain required data for the Government, thus eliminating some of the confusing, harassing and laborious reporting procedures of the past.

4. Keep up-to-date industry organization plans for crisis, so that operating procedures and the nucleus of an operating agency will be ready for immediate use in the event of general war or other grave emergency.

5. Act as the authoritative voice of industry so that the Executive Branch and the Congress may hear the opinions of business and receive helpful information from business on legislative and administrative matters. This exchange will be to the advantage of Government, business and the public.

6. See to it that, while private business, of course, cannot dictate Government policy and plans, it be placed in a position where it can effectively approve or disapprove of the implementation of such policy and plans from the standpoint of their practical workability in everyday industrial operation.

At the outset, the primary function of the business service agency will be to administer the Defense Materials System. "DMS" is a controls system under which atomic energy and defense uses of steel, copper and aluminum are provided with specific allocations in the tonnages and shapes as required.

Heart of the system is a month-by-month set-aside at the mill level of the tonnages and shapes required in atomic and defense uses.

Now being distributed on an allotment basis under DMS are roughly 12 to 15% of the total output of steel (the percentage is greater in heavy bar and seamless tubing, but averages out roughly to the percentages noted); 25% of copper, and 30% of aluminum. These percentages will continue through the remainder of this year, and changes will depend on major adjustments in military policy.

Even if there should be a substantial drop in the overall civilian

demand for metals, a controls program will still be justified if only to spread the military requirement for materials evenly among producing mills. This, of course, remains valid only so long as the military take is substantial.

The following is a simplified description of DMS, sketching its essential highlights and indicating at what point in the materials distribution system it catches hold.

Classification of products. Products are classified under DMS in the same manner as under CMP, viz., "A" products, including military end items and special components; and "B" products, including civilian-type end products and general components.

"A" Product Procedure. Contracts for defense end products are identified by defense symbols A through E. Contractors file applications for production schedules and allotments. They receive authorized production schedules, quantitative allotments of steel, copper and aluminum, and preference rating authority for other production materials from claimant agency.

Producers of "A" components receive production schedules, allotments, and ratings from their customers on basis of application.

"B" Product Procedure. Manufacturers of civilian-type end products and general components who receive defense-rated orders are authorized to self-assign B-5 symbol to identify their purchases of controlled materials and other production materials needed to fill such orders. Thus "B" product manufacturers are not required to file any applications.

Procedure for Defense Construction. Contractors for military or atomic energy construction projects file applications and receive authorized construction schedules, allotments, and rating authority for other construction materials.

MRO Procedure. Manufacturers and builders who hold defense orders and require MRO to fill such orders are authorized to self-assign a special symbol to obtain MRO supplies.

Procedure for Civilian Manufacturers. Manufacturers of products or components for civilian use are not subject to, nor restricted by DMS—that is, they operate in the free market.

Procedure for Civilian Construction. Contractors engaged in construction for civilian purposes are not subject to, nor restricted by DMS.

Essential Differences Between CMP and DMS

	CMP	DMS
1.	All users of controlled materials, for defense or civilian purposes, subject to Plan.	Only users of controlled materials for defense purposes subject to System.
2.	Government allocates steel, copper and aluminum for all purposes—defense and civilian.	Government allocates steel, copper and aluminum only for defense purposes.
3.	Under "close-end" Plan, programming of all production and construction using steel, copper and aluminum.	Under "open-end" System, programming only of production and construction for defense purposes.
4.	Affirmative priorities assistance given for both defense and civilian programs.	No priorities assistance for civilian production or construction.
5.	All Class B product production covered by allotment or self-authorization—principally the former.	Only Class B product production for Department of Defense and Atomic Energy Commission programs covered by System —principally self-authorization —allotments only to a very limited extent (APRA B products).
6.	More than 15 Claimant Agencies.	Only 2 Claimant Agencies—Department of Defense and Atomic Energy Commission—and 2 or 3 Allotting Agencies.
7.	Seven basic CMP Regulations and approximately 100 other regulations and orders.	Two basic DMS Regulations and 13 other regulations and orders.
8.	Special assistance to all programs, defense and civilian.	Special assistance only to projects sponsored by Department of Defense or AEC.
9.	Latter stages of Plan involved a two-band priority concept.	System will operate under a single-band priority concept.
10.	Simplification over World War II CMP.	Simplification over Post-Korea CMP.
11.	Establishment and initiation of Plan after lapse of several years.	Smooth transition from CMP to DMS without hiatus.
12.	Controlled MRO for entire economy.	Involves MRO only for those engaged in defense programs.
13.	Mills not permitted to accept unrated orders for controlled materials.	Mills permitted to accept unrated orders for controlled materials, subject to mandatory acceptance of defense orders to extent of "set-asides".
14.	Inventory controls over steel, copper and aluminum.	No inventory controls.

Molded rubber parts have many applications

Let RUBBER Do the Job

By C. B. Hall, Product Development Manager,
and **J. D. Waser,** Industrial Division Manager, Essex Rubber Company, a Thermoid Subsidiary, Trenton, N. J.

PHYSICAL CHARACTERISTICS AVAILABLE IN MOLDED RUBBER PARTS

Color:	Unlimited—entire visible spectrum from red through violet, plus black and white.
Hardness:	Hard rubber, such as ebonite.
Softness:	Sponge rubber.
Temperature Range:	—80°F to +250°F.
Size (Molded Parts):	Pieces that will fit into a press opening 36″ wide, 36″ deep, and 8″ high.
Continuous Lengths:	Sheets with design or impressions on one or both sides, almost unlimited in length; rubber only, fabric backed, or with fabric plies.
Shapes:	Limited only by mold-makers' ingenuity, which is great.
Corrosion Resistance:	Rubber compounds are available to resist oil, gasoline, aromatic and aliphatic compounds, hydraulic fluids, acids, alkalies and other corrosive solutions. New ingredients are constantly being developed to extend the range of corrosion resistance. The silicone rubbers, for example, stand up under attack from a wider variety of materials than other types of rubbers.
Thinness of Section:	Down to 1/32″ is easy. Thinner sections are being made.
Fabric Plies:	Cotton and synthetic fabric reinforcements add tensile strength.
Bonding to Metals:	New techniques permit positive bonding to almost any metal. Aluminum, copper, brass, and steel bonding is common.
Combinations:	It is not always possible to get all properties in one compound. A combination of hardness and elasticity, or of softness and toughness, is possible. It is sometimes difficult to obtain a combination of corrosion resistance and high strength. Colors can be put into almost any compound.

DON'T forget rubber. New properties have been imparted to rubber. It still stretches and bounces as always. Now it can do and is doing more jobs in industry than ever before because rubber is now being made with improved and controlled characteristics. Rubber conveyor belts and rubber hose are well-known. Not so well known are the thousands of special molded rubber parts that have solved thousands of industrial design problems.

Molded to Close Tolerances

With present day know-how, rubber parts can be molded to *close tolerances*. We make a small diaphragm for hydraulic-brake systems. The diameter (1½″) is held to a tolerance of plus or minus .015″. Special compounding makes this diaphragm resistant to hydraulic fluids and low and high temperatures. Because failure of this part would mean failure of the brakes, long life and dependability under pressure and temperature are essential properties.

Molded parts can be made in *thinner sections* than formerly. We make a sight boot or guard which is .020″ thick. Not only is it thin, but it must remain flexible at temperatures down to —70°F. A gun-sight eye-shield which we supply to the military forces (Figure 1) also is molded with the part, in contact with the gunner's eye, about 1/64 in. thickness.

Vibration and noise can be reduced by the use of rubber parts. Automotive engines have long been

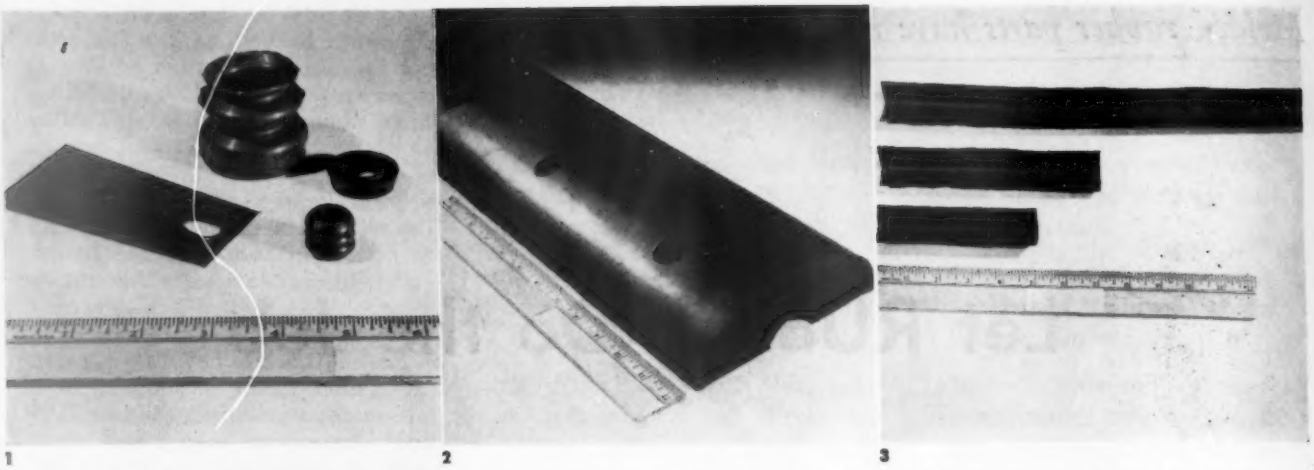


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Figure 1. *Left:* Rubber chime seals demountable tanks for gasoline, water, and liquids of all kinds for Army use. Specifications call for softness with toughness, and close tolerances down to taper of .020". *Above:* Gunsight eye shield is thin but flexible at low temperatures. *Lower right:* Sight boot or guard for protecting military gunsights is .020" thick, and retains flexibility down to —70 F. Figure 2. This abrasion and salt water resistant bumper for small marine craft is molded in long lengths and has brass bushings bonded to the rubber. Figure 3. Filet bending radii gaskets in lengths up to six feet, with feather edges, seal joints in demountable metal tanks used by the Army.

set on rubber pads to reduce vibration. Rubber cannot readily be compressed to permit a metal to metal contact and returns to normal shape after pressure is removed. For instance, we make a special noise eliminator used on heavy vehicles to prevent a metal to metal contact during heavy loading.

Rubber makes excellent fenders or bumpers. We have improved on its well-known property of sustaining an impact without taking a permanent set. The Essex Rubber Division of Thermoid makes a fender or rubber rail for small marine craft that resists attack by *salt water and sunlight* to an unusual degree. In addition the rub-rail has brass bushings recessed in it by which the fender is mechanically secured to the craft. The bushings, however, are bonded by positive chemical means to the fender (Figure 2) so that the rubber cannot separate from the bushing.

Rubber Chimes Wanted

The Armed Forces had a problem involving bolted, demountable tanks for holding liquids of all kinds including water, high octane gasoline and other fluids. These containers range in capacity from 100 barrels to 10,000. They are shipped knocked-down for rapid erection near troops and are designed for easy disassembly. The Department of Defense wanted rubber chimes (Figure 1) to *seal the tank* at corner joints and long strips of filet bending radii gaskets (Figure 3) to seal the long horizontal and vertical seams. The specifications on softness were difficult to meet. In addition the dimensions had to be held to close limits with the edges tapering off to .020 in. We developed a synthetic compound that satisfied all conditions of *resistance* to *various liquids* that might be placed in the tanks. Our compound met the additional condition of *non-toxicity* when in contact with drinking water.

Rubber gaskets for *sealing windows* is an old story. An interesting recent application is found on the crow's-nest of the S. S. "United States". The windows are of Plexiglas. Rubber gaskets seal the window edges. Rubber washers prevent salt spray and rain from being forced past the torque shaft that actuates the windshield-wiper (Figure 4).

Rubber sheets are used in many industrial processes. (Figure 5) In forming aluminum, for instance, one of our special rubber sheets is used to prevent cracking. The rubber sheet is placed over the male part of the die and the aluminum sheet is set over the rubber. As the female half of the die meets the male, the rubber sheet equalizes the pressures and cushions the aluminum at points of greatest change of shape. The rubber prevents the up-

TENSILE STRENGTH OF REINFORCING FABRICS*

	COTTON	RAYON	NYLON
Weight per square yard—9 oz.			
Tensile Strength			
Warp	100	252	516
Filling	115	280	441
Gage	.024"	.019"	.021"
Weight per square yard—14 oz.			
Tensile Strength			
Warp	160	422	942
Filling	165	480	944
Gage	.037"	.034"	.031"
Weight per square yard—20 oz.			
Tensile Strength			
Warp	285	664	1242
Filling	285	519	901
Gage	.051"	.035"	.035"

*The tensile strength of the rubber compound used can, in some cases, be added to the strength of the fabric.

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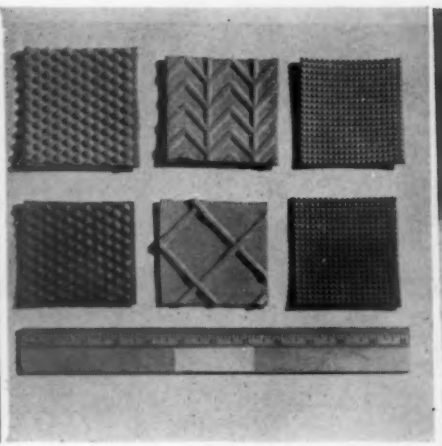

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Figure 4. Crow's nest of *S. S. United States* has Plexiglas windows sealed with rubber. Axle of windshield wiper is also sealed by rubber gasket. Figure 5. Fabric backed rubber sheets like these samples are used in many industrial processes. Specimen at lower left is used by hat makers to form felt fabric. Figure 6. The top piece is a fabric-reinforced roller used in wool scouring; it resists attack by chemicals used in washing raw wool. Bottom piece is a hydraulic press gasket, made to close tolerances for a tight fit, yet easy to install.

per and lower parts of the die from overstressing and cracking the aluminum of any point. The rubber seems to flow under pressure and yet returns to its original shape when the pressure is removed and can be used repeatedly.

A wide variety of special designs, depressions and projections molded into the surface of rubber sheeting are available. Hat-makers use a rubber belt with small round knobs molded into the surface. The fabric-backed sheets process the felt.

The *abrasion resistance* of rubber is put to good use in truck flaps. Made in two sizes and 5/16 in. thick, truck flaps are attached at the top only to the rear of trucks to prevent dirt, water, small stones from being cast on vehicles traveling behind the truck.

Rubber is especially useful in *sealing* large *hydraulic presses*. We use our own press gaskets on our hydraulic presses at the Essex Rubber Division. Made to close tolerances, a tight fit is obtained. Special compounding for resistance to fluids, heat and wear produces a gasket that is long-lived and is easy to install. (Figure 6)

So far we haven't mentioned *color*. Black is most common but today rubber parts can be made in any given color or shade, from pure white right on through the spectrum. Colors are not applied on the surface but are mixed right into the rubber. Solid colors are mixed in the Banburys, while mottled effects are achieved on calenders.

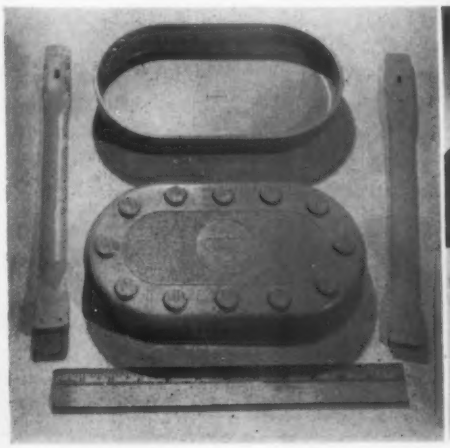
Take the carrying handle we make for golf bags. (Figure 7). Rubber has replaced leather because it lasts longer. It is more flexible. It is impervious to water and perspiration. And, the color remains as long as the bag is used. A harder rubber compound is used for golf bag bottoms. This item also replaced leather and is pigmented.

Using advanced techniques, rubber can be *positively bonded*, not merely cemented, to almost any metal. Many items are made at our plant in which a thin layer of rubber is bonded to aluminum or steel. A ½" thickness of rubber, for example, can be bonded as a solid "tire" to a metal disk.

To go back to vibration reduction, improved techniques in positive bonding of rubber to metal surfaces offers a new means of solving noise and vibration problems. Inconvenient or insecure attachment of rubber pads and other shapes by bolts, cements or mechanical fasteners can be avoided.

All of the parts detailed so far are composed of solid rubber, natural

Figure 7. Center pieces are golf bag bottoms; outside pieces are golf bag handles. Rubber replaced leather in these parts because color is mixed right into the rubber and does not come off with wear, resists attack from perspiration, sunlight, and abrasion. Figure 8. Fabric-reinforced links in various sizes, used as flexible couplings in tractors, Figure 9. Some of the shapes and sizes of fabric-reinforced plungers used in piston pumps and sprayers. Rubber binds and protects fabrics against corrosion from liquids; fabric adds strength and makes the plungers hold their shape for continuous tight fit.



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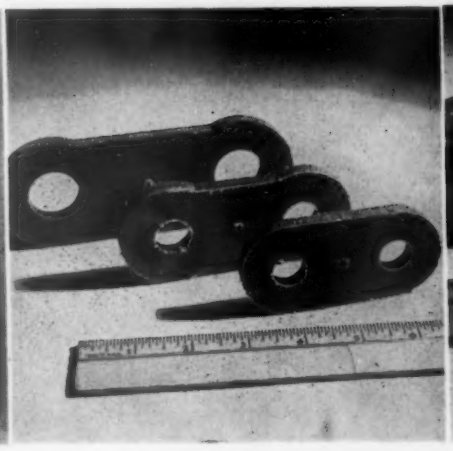

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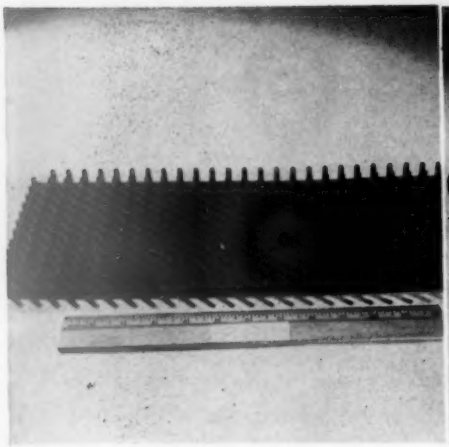

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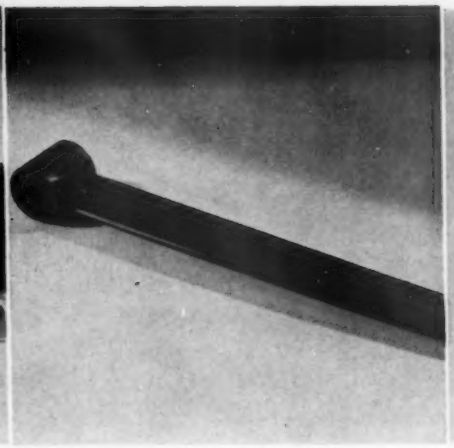

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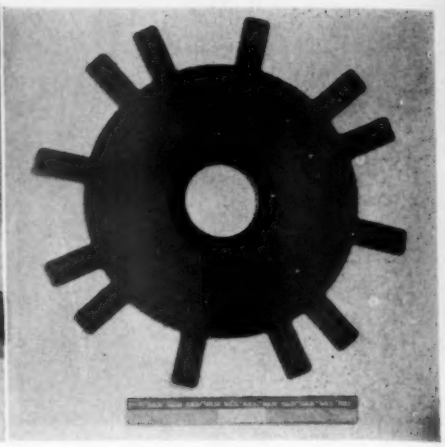

12

Figure 10. Potato beater bar segment. Several of these are mounted on a rotary member for removing soil from potatoes and other farm products prior to marketing. Figure 11. Flails or beaters for mounting on a rotating member of a machine used to disintegrate vines, beet tops, and other vegetable matter before plowing under. Compounded for strength, resistance to vegetable acids, sunlight, and abrasion. Figure 12. Wire holder of fabric with rubber ring molded to fabric in center. Wire is coiled concentric with hole, and is held in place by folding fabric over the coil. Rubber ring protects fabric as communication wire is played out at high speed in military operations.

or synthetic. Now, let's consider molded rubber parts with *fabric plies*. Layers of rubber-impregnated cotton duck between rubber covers is an old story with conveyor belts. Look at Figure 8 for an example of fabric used to add tensile strength to a molded part. This is one of various sizes and shaped of links made for clutch drives. Usually, these links are clipped together in sets of five. One end of the link is attached to the flange of one shaft and the other end is fastened to the flange of the other shaft.

In Figure 9 we see fabric-reinforced plungers used on a wide variety of pumps and sprayers. These parts are made to close tolerances. Flexibility of the rubber permits a tight fit; the fabric provides the stiffness required to hold shape. Table I gives an idea of the tensile strength of fabrics used as reinforcement in molded rubber parts. The tensile strength of the rubber compound used can, in some cases, be added to the strength of the fabric.

Soil clinging to potatoes is removed on a mass-production scale by rubber beater bars (Figure 10) developed to fit a special machine designed by the Aeroglide Corp., of Raleigh, N. C. A rotating member is covered with a number of beater bars; the rubber projections remove the soil without damaging the potatoes.

The Thermoid Western Co., at Nephi, Utah, recently perfected the molding of beater bars for agricultural use. Vegetable matter such as vines and sugar beet tops must be disintegrated before being plowed under; 108 pieces as shown in Figure 11 are attached to the rotating member of the beater machine. The beater bars or flails are compounded for resistance to vegetable acids, sunlight, and abrasion; in addition, they have tensile strength sufficient to withstand centrifugal forces.

We make special hatch-cover seats for the Navy, with aluminum inserts. Special requirements were met regarding aging, elongation, tensile strength, and hardness, because of exposure to direct sunlight and salt water.

We have enumerated here only a few examples taken from current production. The accompanying check list of available properties may suggest whether a molded rubber part can lick one of your problems. The sky is still not the limit, but we are far ahead of the technology available just before World War II.

Figure 13. Fabric reinforced coupling discs are available in many sizes, thicknesses, drillings. Figure 14. Bus bar protector has steel insert for strength and rubber covering to resist corrosion in electrolytic refining of copper. Figure 15. Pump valve packings used in the oil fields are made to close tolerances to fit metal retainer.

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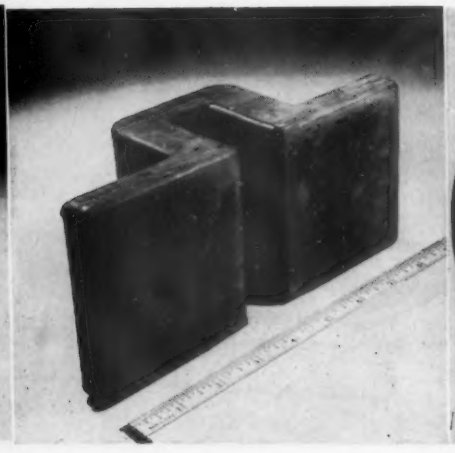


15

The Pulse of Business

SEPTEMBER, 1953

PURCHASING'S
Summary of economic conditions

After the best summer on record, business heads into fall at a brisk pace, but sales, purchasing and production policies are being tightened up for the slight slide expected to develop within the next 6-10 months.

Through July, industry enjoyed peak activity - the best yet for the period, according to the Department of Commerce - and the Korean truce apparently has had little immediate effect. Basic indicators in the following pages give an idea of how things have been going:

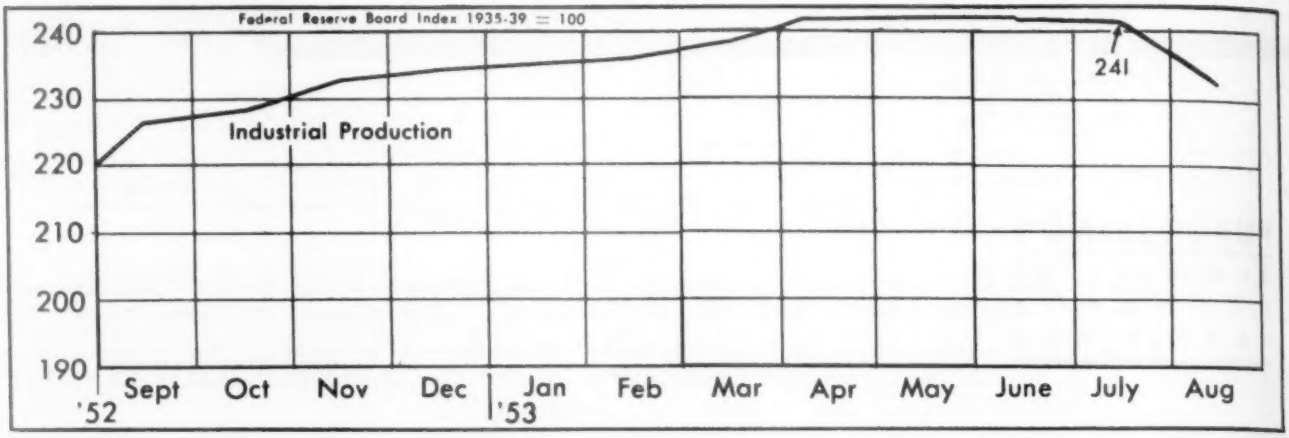
Industrial production stayed relatively high despite the usual summer letdown; construction spending was higher in July than in any month of the year; manufacturers' sales stayed up in June, but new orders continued to drop; unemployment was at a comparatively low 1,500,000; personal income continued to rise, and Mr. Consumer kept on spending his increased income.

The momentum generated by that kind of business leaves prospects for the next few months looking pretty good - things just don't slow down overnight in an economy like ours. But these basic questions are being asked in management councils: will demand hold up in our markets?; are we overproducing?; hadn't we better take a second look at our buying and inventory policies?

The formidable purchasing power of one group of consumers, the farmers, for instance, has been curbed by the drop in agricultural prices. Farmers have spent 10% less for new plant and equipment this year than they did in a like period in 1952, and inventories of farm machinery have been piling up. Production cut-backs and lay-offs have resulted in some companies making the equipment. Reports of order cancellations at steel mills continue, with all types of producers, including the automotive companies, said to be concentrating on trimming inventories.

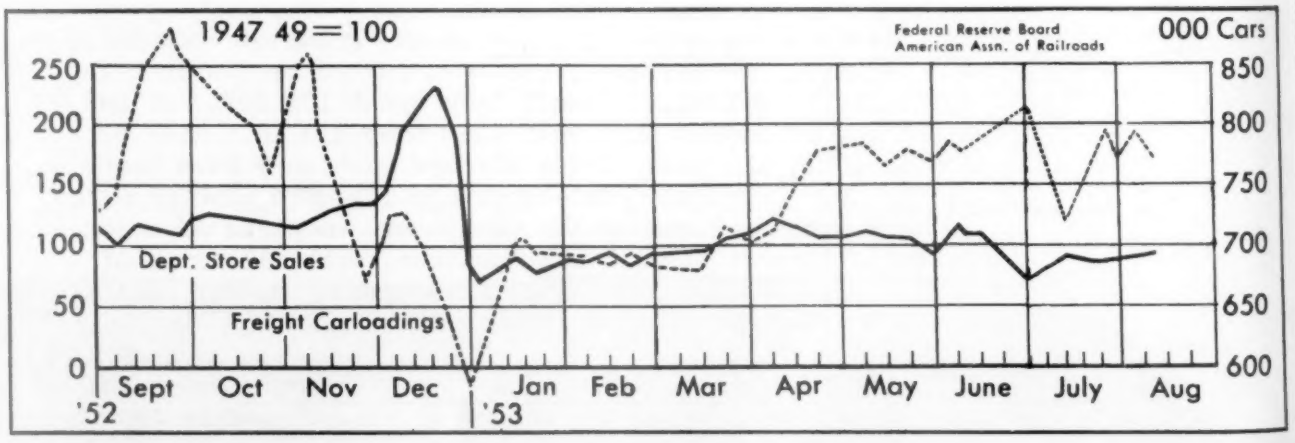
A tip on how purchasing is adjusting its sights comes in the latest business survey report of the Purchasing Agents Association of Chicago. The number of buyers in the 0-60 day ordering bracket has risen slightly. The association's committee says this change, though limited, seems to come from the feeling that the present price structure of several commodities does not support long commitments.

PRODUCTION



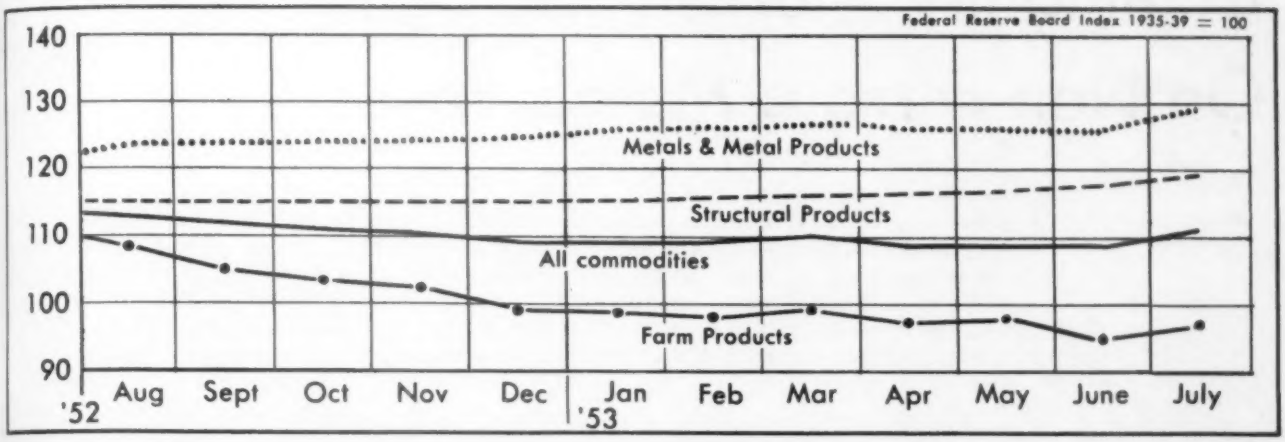
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1935-39=100	232(est.)	241	193	— 3.7	+ 20.2
Steel Production (Weekly)	000 net tons	2,170	2,169	2,017	0	+ 7.5
Electric Power Production (Weekly)	mil KWH	8,464	8,096	7,495	+ 4.5	+ 12.9
Bituminous Coal Production (Weekly)	000 net tons	9,400	6,860	9,430	+37.0	— 0.3
Auto, Truck & Bus Output (Weekly)	units	133,357	156,662	43,874	—14.9	+203.9
Petroleum Output (Daily Average)	000 bbls.	6,538	6,396	6,267	+ 2.2	+ 4.3

TRADE



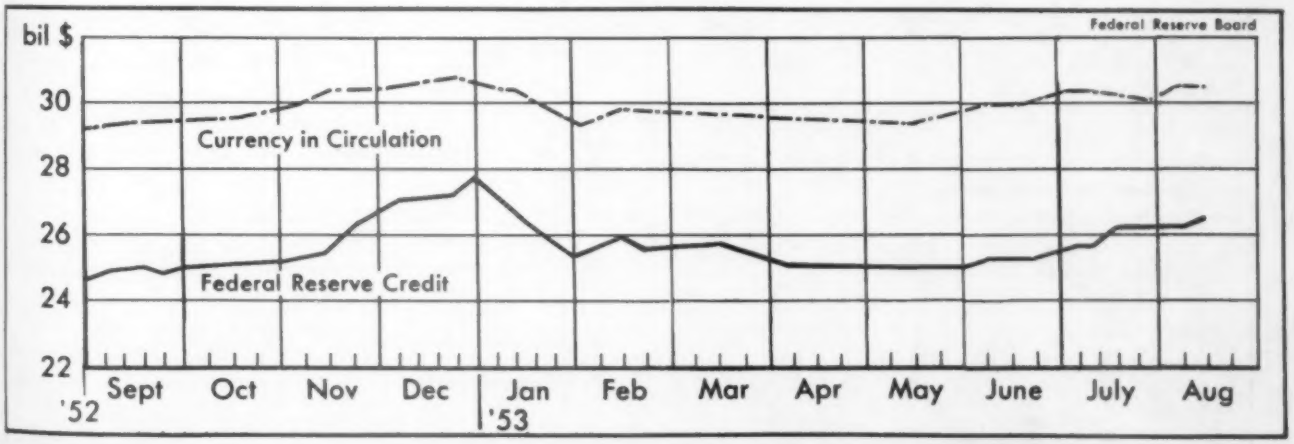
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.)	1935-39=100	92	92	90	0	+ 2.2
Commercial Failures (Dun & Bradstreet)	no.	195	139	123	+40.0	+ 58.5
Freight Carloadings	cars	785,349	721,454	781,648	+ 8.8	+ 0.5
Miscellaneous Carloadings	cars	375,509	349,119	359,820	+ 7.5	+ 4.4

PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS)	1947-49=100	110.9	109.5	111.8	+ 1.2	— 0.8
Farm Products	1947-49=100	97.9	95.4	110.2	+ 2.6	— 11.2
Metals & Metal Products	1947-49=100	129.3	126.9	121.9	+ 1.8	+ 6.1
Structural Products	1947-49=100	119.4	118.1	113.8	+ 1.1	+ 4.9
Steel Billets (Pittsburgh)	net ton	$62.00	$62.00	$56.00	0	+ 10.7
Steel Scrap, heavy melting, Pitts	net ton	$48.00	$47.50	$43.00	+ 1.0	+ 11.6
Copper, electrolytic	lb.	.28½—.30	.29¾—.30	.24½	— 4.3	+ 16.3
Rubber (rib-smoked sheets)	lb.	.23⅜	.23⅞	.29¾	— 2.1	— 21.5

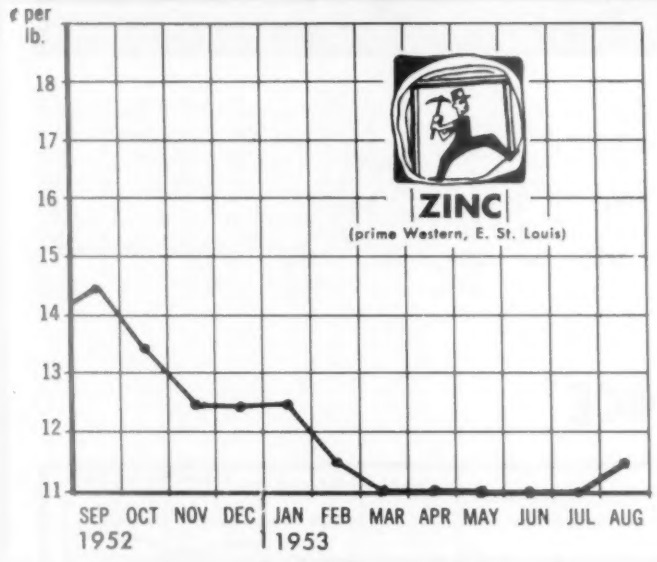
FINANCE

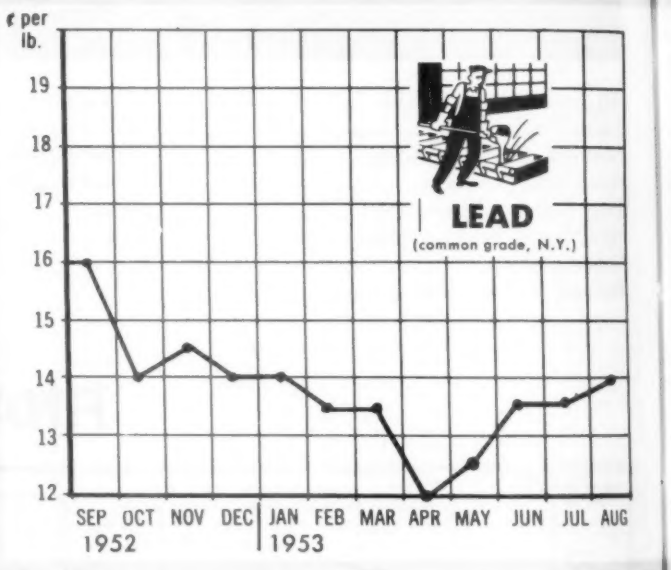


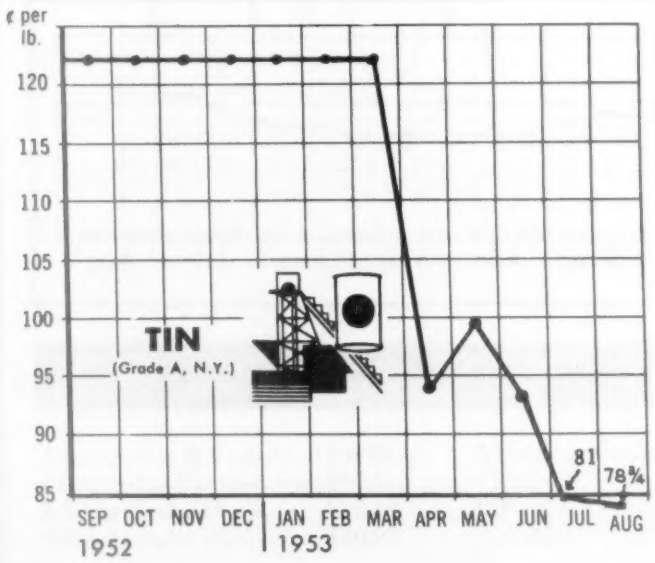
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's)	1926=100	196.4	192.0	200.7	+ 2.2	— 2.1
Bank Clearings (New York)	mil $	7,763	8,277	7,782	— 6.2	— 0.2
Federal Reserve Credit	mil $	26,352	25,923	24,553	+ 1.6	+ 7.3
Currency in Circulation	mil $	30,158	30,163	29,051	0	+ 3.8

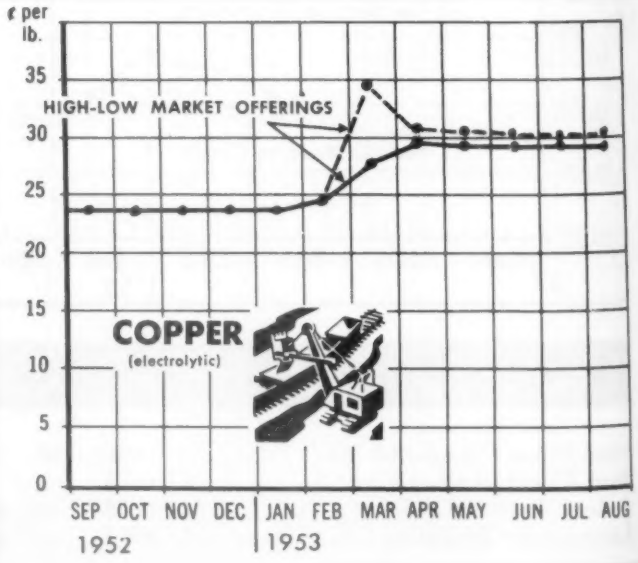
Commodity Market Spotlight On Non-Ferrous Metals Prices

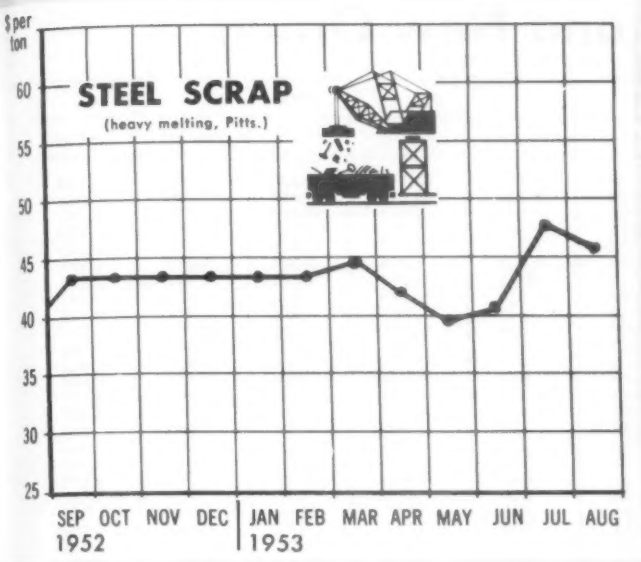
As expected, establishment of a truce in Korea had no heavy effects on commodity prices as a whole. Realization that domestic demand will stay high and that defense expenditures will not be cut drastically was apparently effective in helping to hold off any serious break in prices. Chief interest at the moment lies in the non-ferrous market, with copper, lead and zinc users reported following cautious buying tactics. Indications are that copper prices will drop, that lead and zinc prices will remain on the soft side, and that aluminum prices will maintain their present strength.

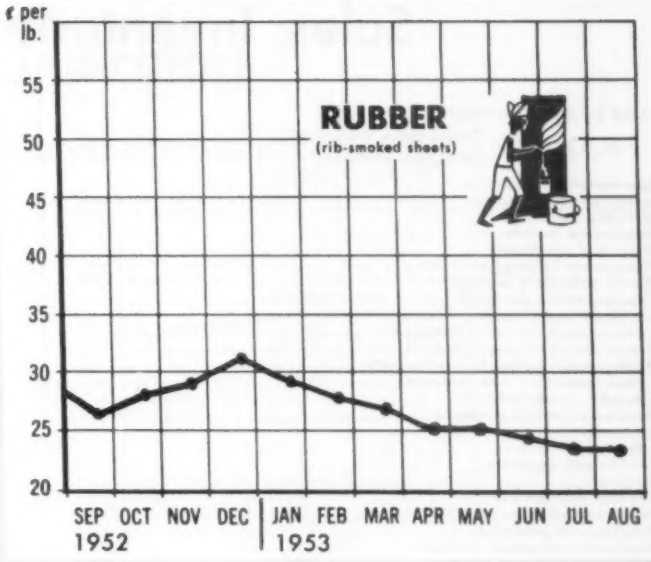


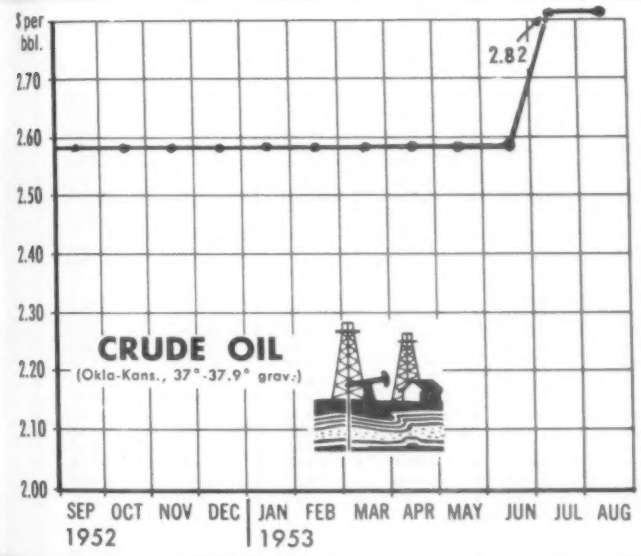


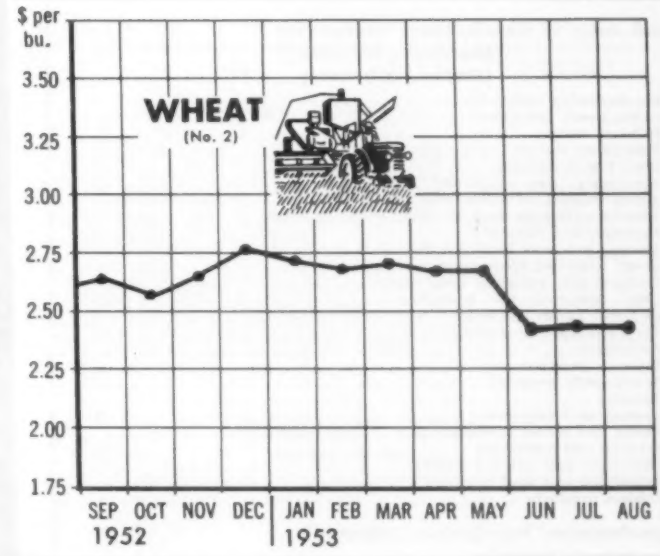


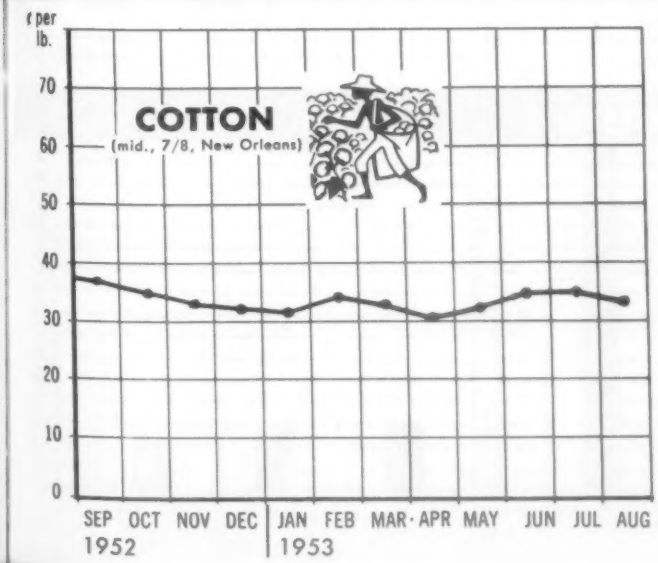


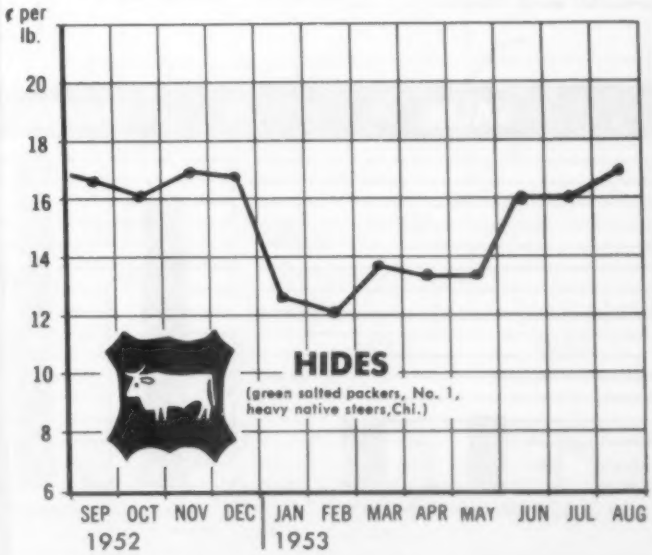

$ per ton
STEEL SCRAP
(heavy melting, Pitts.)
60
55
50
45
40
35
30
25
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953


¢ per lb.
RUBBER
(rib-smoked sheets)
55
50
45
40
35
30
25
20
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953


$ per bbl.
2.82
CRUDE OIL
(Okla-Kans., 37°-37.9° grav.)
2.70
2.60
2.50
2.40
2.30
2.20
2.10
2.00
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953


$ per bu.
WHEAT
(No. 2)
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953

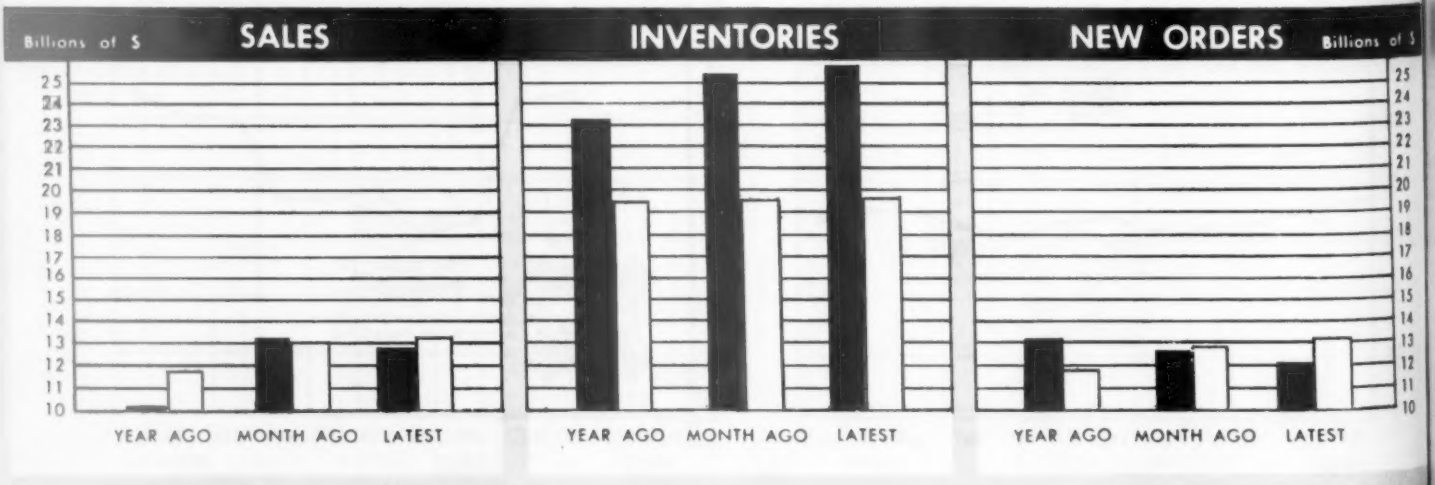

¢ per lb.
COTTON
(mid., 7/8, New Orleans)
70
60
50
40
30
20
10
0
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953


¢ per lb.
HIDES
(green salted packers, No. 1, heavy native steers, Chi.)
20
18
16
14
12
10
8
6
SEP OCT NOV DEC
1952
JAN FEB MAR APR MAY JUN JUL AUG
1953

Sales, Inventories and New Orders

	1952	1953				
	June	February	March	April	May (r)	June (p)
Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)						
All Manufacturing industries	21,888	25,170	25,469	26,838	26,226	26,118
Durable goods industries	10,060	12,828	12,821	13,490	13,238	12,949
Primary metals	991	2,115	2,150	2,296	2,258	2,191
Fabricated metals	1,085	1,481	1,446	1,589	1,507	1,472
Electrical machinery	1,154	1,341	1,347	1,316	1,361	1,376
Machinery (except electrical)	1,964	2,204	2,137	2,224	2,097	2,044
Motor vehicles & equipment	1,815	2,164	2,241	2,344	2,311	2,263
Transportation equipment (exc. motor vehicles)	736	837	786	878	885	819
Furniture and fixtures	350	315	361	373	377	370
Lumber products (exc. furniture)	597	766	717	800	745	760
Stone, clay and glass products	483	571	585	538	590	606
Professional, scientific instruments	265	311	331	365	370	362
Other industries, incl. ordnance	619	723	719	766	738	686
Nondurable goods industries	11,828	12,342	12,648	13,348	12,988	13,169
Food and kindred products	3,171	3,314	3,480	3,674	3,572	3,467
Beverages	638	465	570	576	600	664
Tobacco products	310	333	325	327	308	318
Textile-mill products	1,116	1,113	1,127	1,345	1,242	1,174
Apparel	1,124	1,038	1,036	1,176	1,174	1,258
Leather and products	290	307	292	299	301	343
Paper and allied products	625	722	718	720	708	741
Printing and publishing	684	754	754	782	770	770
Chemicals and allied products	1,495	1,715	1,767	1,808	1,781	1,773
Petroleum and coal products	1,945	499	510	2,146	2,061	2,188
Rubber products	430			496	472	n.a.
Book value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)						
All Manufacturing industries	42,892	43,848	44,056	44,574	44,970	45,496
Durable goods industries	23,348	24,480	24,746	25,122	25,420	25,799
Primary metals	2,945	3,080	3,070	3,083	3,132	3,200
Fabricated metals	2,344	2,420	2,446	2,507	2,573	2,709
Electrical Machinery	3,107	3,137	3,200	3,302	3,382	3,423
Machinery (exc. electrical)	5,461	5,445	5,482	5,514	5,514	5,544
Motor vehicles & equipment	2,562	3,050	3,139	3,265	3,313	3,300
Transportation equipment (exc. motor vehicles)	2,202	2,609	2,643	2,661	2,635	2,681
Furniture and fixtures	556	544	544	534	554	577
Lumber products (exc. furniture)	1,030	1,076	1,092	1,086	1,089	1,087
Stone, clay and glass products	937	890	900	920	935	958
Professional, scientific instruments	762	808	794	799	807	818
Other industries, incl. ordnance	1,444	1,422	1,438	1,451	1,486	1,501
Nondurable goods industries	19,544	19,368	19,309	19,452	19,550	19,696
Food and kindred products	3,473	3,378	3,275	3,241	3,198	3,166
Beverages	1,296	1,184	1,198	1,190	1,184	1,182
Tobacco products	1,693	1,738	1,731	1,750	1,766	1,747
Textile-mill products	2,734	2,618	2,597	2,648	2,671	2,753
Apparel	1,537	1,683	1,674	1,678	1,672	1,699
Leather and products	558	534	553	572	604	609
Paper and allied products	1,028	992	990	998	987	966
Printing and publishing	741	746	755	755	736	750
Chemicals and allied products	3,011	2,894	2,907	2,969	3,005	3,086
Petroleum and coal products	2,607	2,713	2,726	2,726	2,803	2,814
Rubber products	864	887	903	925	924	n.a.
Manufacturers' New Orders (Adjusted)						
All Manufacturing industries	25,042	25,530	24,591	25,708	25,606	25,112
Durable goods industries	13,138	13,138	12,023	12,621	12,744	12,053
Nondurable goods industries	11,904	12,392	12,567	13,088	12,862	13,059

(r) — revised *estimated p — preliminary n.a. — not available



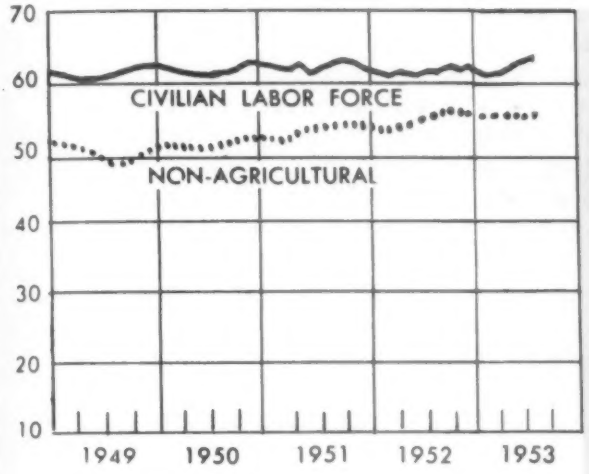
DURABLE GOODS

NON-DURABLE GOODS

Economic Indicators

EMPLOYMENT

(in millions)

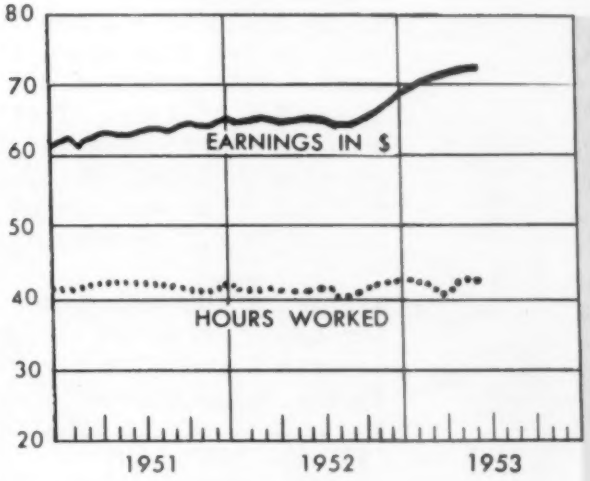


Source: Bureau of the Census

Total employment remains above the impressive 63 million figure, and except for certain spots, unemployment is below last year's total.

AVERAGE WEEKLY EARNINGS AND HOURS

MANUFACTURING

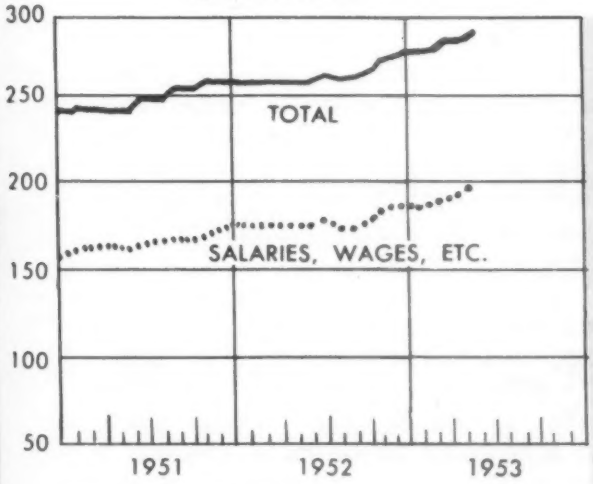


Source: U.S. Department of Labor

Average wages in manufacturing industries have reached $72.04 per week. This is an increase of 22.5% over time Korean war broke out.

PERSONAL INCOME

(billions of dollars)

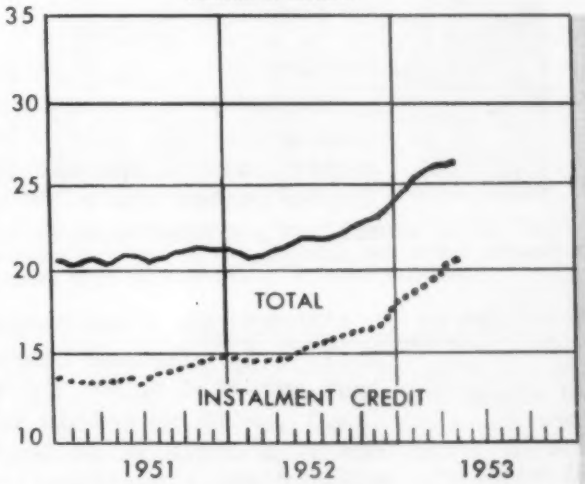


Source: U.S. Department of Commerce

Personal income appears to be headed toward a record total for 1953. Annual rate to date is 283 billion, 7% over 1952.

CONSUMER CREDIT

(billions of dollars)



Source: Federal Reserve Board

Instalment credit continues its upward course with the current figure topping last year's by about 4.5 billion. Autos account for most.

Straws in the Trade Wind

CONSTRUCTION GOING UP - A new record in expenditures for construction will be set this year, the Commerce and Labor departments forecast. It's expected dollar value of new construction will hit about $35 billion. That's approximately 6% over last year. Housing starts were off by about 7,000 units in July as compared with June, but the Bureau of Labor Statistics says, "it was about the amount that might be expected for this time of the year." Meanwhile, a Federal Reserve study shows that -

HOUSES ARE IN DEMAND - Consumer demand for housing will remain strong throughout the rest of the year, according to another of the Reserve Board's surveys - which have a good record for accuracy. It was found that a larger proportion of consumers intended to buy houses during 1953 than had intended to buy them during 1951 and 1952.

NO END TO AID IN SIGHT - Foreign aid must continue "indefinitely" if other nations are to develop the strength they need to fight the spread of communism, President Eisenhower recently told Congress in a report on the mutual security program. But, he added, U.S. dollar and military help are not enough - trade among the free nations must be expanded and investment of private venture capital abroad must be encouraged.

IMPORTS RISE, EXPORTS DROP - Imports rose almost $50 million during July over the previous month, and exports declined by about $60 million, according to preliminary figures. Both, however, were well ahead of totals for the same month last year.

OIL SPOUTS - World production of oil hit a new record in the first six months of this year. The authoritative Petroleum Information Bureau says the total output in the period was 332 million metric tons as against 312 million in the first half of 1952. United States again led in production, with an output of 171 million, compared with 161 million in the first six months of last year.

ALOHA TO ALLOCATIONS - The International Materials Conference, formed in 1951 to allocate scarce metals, has ended all curbs on the last material under its control - nickel. It appears that the I.M.C., with no metals to allocate, is about to go out of business. A decision on the move is scheduled to be made at the mid-September meeting.

Purchasing High Vacuum Equipment

By T. A. Dickinson

DURING the past two or three years, "high vacuum" has become a fairly common, yet often misunderstood, industrial term. It designates, briefly, a condition in which pressure has been reduced to the equivalent of 29 to 30 inches of mercury, 30″ Hg. being the perfect vacuum. (Measurement of vacuum is commonly expressed as an inverse function, representing the measure of outside atmospheric pressure tending to rush in and fill the vacuum, so that the normal barometric reading of 30″ would be the equivalent of perfect vacuum, while lesser readings represent varying degrees of partial atmospheric exhaustion.)

Vacuum pumps capable of reducing pressures to a degree approaching 29″ have been used in a number of industries over a period of about half a century. At this writing, there is no good reason to believe that a perfect vacuum can be produced with man-made equipment. However, high vacuum pumps now available can reduce pressures to a value only one micron removed from the ideal of 30″ Hg.

This is not merely an academic achievement. It can be very important if you want to:

(a) create an inert atmosphere for sintering, heat treating, brazing, or melting materials such as magnesium and titanium without difficulties due to oxidation or combustion;

(b) manufacture top quality thermos bottles, electronic tubes, etc.;

(c) package certain perishable products so that they will not deteriorate for a long period of time;

(d) make use of recently developed evaporation coating equipment in precision metallizing or finishing various products; or

(e) impregnate or seal metal castings, wood products, armatures, coils, condensers, etc.

A Northrop Aircraft worker mounts a glass prism for evaporation coating. The overhead vacuum chamber will be lowered and evacuated with a high vacuum pump to permit the creation of an inert atmosphere to prevent oxidation.

There is a growing tendency in engineering circles, at present, to feel that the quality of a vacuum pump is proportional to the ability of the unit to produce a high vacuum. That is not quite accurate in many circumstances. At least, it may involve paying for a lot of quality that may be unnecessary.

For example, after receiving an engineering requisition for a high vacuum pump costing more than $1,000, P. A. Irving Herrick of Sintered Products Company decided to find out why a conventional pump, costing in the neighborhood of $100, would not serve the purpose. Plant engineers assured him that the high vacuum unit would last longer and reduce operating costs; but further investigation disclosed that such a pump would require much greater expenditures for power and maintenance than would a conventional vacuum pump.

Of course, it was possible that the company would eventually have an application that would make the

Liquid nitrogen refrigerant used in sub-zero temperature processes, is handled in improved thermos container, one of the many modern technical products made possible by the new high vacuum technology and equipment.

use of high vacuum equipment compulsory — as the engineers pointed out. But was that a possibility that could justify an extra expenditure of more than $900?

"We bought the conventional pump," Herrick says, "because it would soon amortize its initial cost in terms of operating expenditures, and because it could obviously be used indefinitely for known requirements. Regardless of whether we have an eventual need for the high vacuum equipment, we're always going to be able to save money by using a conventional pump in cleaning the plant!"

The cost of a high vacuum pump is not high where such equipment is applicationally necessary, for the same reason that a micrometer is inexpensive if it is used where a ruler would yield inadequate results.

Buyers for Northrop Aircraft's Pasadena optical laboratory discovered one of the most important uses for high vacuum equipment when it recently became necessary for them to purchase coating equipment for the deposition of pure aluminum on glass lenses and prisms. There are, of course, many ways of metallizing glass, but only one will yield durable coatings with precision thicknesses ranging upward from a millionth of an inch, and that is the evaporation process.

Evaporation coating first necessitates the evacuation of air from a vacuum chamber until an internal chamber pressure of about 0.00015 pounds per square inch remains. Then an inert gas such as argon or helium is allowed to enter the chamber so that the minute quantities of air still remaining therein will be unable to oxidize coating materials, and the coating material is electrically heat-vaporized so that it will be deposited on a product surface like steam.

This is one of the most expensive coating processes, but it is the only known method whereby a metallic material can be deposited so uniformly, durably, and thinly that it will actually improve the ability of a glass lens to transmit light. This makes it highly important in the production of top quality optical equipment, and the high vacuum pump is an essential accessory.

On the other hand, Northrop buyers did not select high vacuum pumps when procuring equipment for the vacuum impregnation of metal castings. This is a process in which air is evacuated from a chamber containing porous articles such as castings or wood products, so that air will not clog the pores and prevent thorough impregnation of the articles when they are immersed in a processing solution. There are many cases where the use of high vacuum equipment is mandatory, because very small quantities of residual air can prevent the penetrating action of a solution when the pores of a workpiece are only slightly larger than the molecules of the impregnant. But since it was possible in this instance to select impregnants that would readily permeate the aforementioned castings with vacuum chamber pressures in the 27″ to 29″ range, Northrop was able to utilize more or less conventional pumps for the purpose.

In a number of circumstances where either a high or low vacuum could be satisfactorily employed, the use of a high vacuum pump can be justified on the grounds that it will yield a better product. For instance, after using conventional vacuum pumps over a period of 20 years in the manufacture of thermos bottles, officials of California Glass Products Company were recently obliged to contemplate the possibility of using high vacuum equipment in order to meet the requirements of a firm that needed special retainers for experiments involving the use of refrigerants such as liquefied helium in the field of low temperature physics.

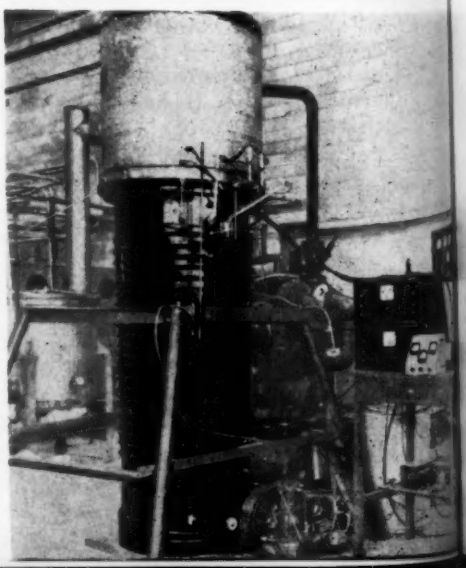
"Most of my associates were opposed to this project," recalls Gaither Wilson, California Glass' P. A., "because it would involve an investment in new equipment that was high in relation to the size of the order we could immediately get for high vacuum retainers. So I decided to do a bit of investigating.

"First of all, I discovered that high vacuum equipment—once procured and in operation — would not increase our production costs by a margin of more than a fraction of a cent per bottle. This meant that we could amortize the cost of a high vacuum pump in routine production work without significantly reducing profits, even if no further orders for the retainers coud be obtained.

"Secondly, I was rather surprised to learn that low temperature physics (which was the particular field of application under consideration) is a branch of science that is attaining a status of considerable importance — not only in research laboratories, universities, and other institutions devoted to experimental work, but in several major industries. It appears that extremely low temperatures can be used, much the same as heat, in processing and testing many important types of commercial materials. For example, it has been proved that poor metallic conductors can be converted into 'superconductors' of electricity by chilling them to temperatures down toward absolute zero.

"Needless to say, this information put our problem in a new light. Procurement of the high vacuum pump was justified not only for the immediate purpose but as a basic facility for future developments and future business. As a matter of fact, although we were hesitant to invest in the initial piece of this equipment, we are constantly operating three high vacuum units right now, and expect to have at least two more in operation before the end of 1953."

One of the world's largest high vacuum pumps, made by Distillation Products Industries for use in nuclear research work.



LET'S HAVE A STAFF MEETING

Why . . . Pro and Con . . . How

By *Albert Pleydell*

AMONG purchasing men there are varying opinions as to the usefulness of intradepartmental staff meetings as an administrative tool. Some people swear by them; others swear at them. Some take them seriously and report highly constructive results; others contend that to describe them as farcical would be sheer flattery.

Why the big difference? I think the answer is that there are staff meetings and staff meetings—the right kinds and the wrong kinds. Some are doomed from the start, so far as contributing to effective administration is concerned. A quick look at some of the all-too-common kinds of staff meetings will reveal the reasons for their ineffectiveness.

THE AUTHOR has worked in—and headed—one of the nation's biggest purchasing organizations, the Purchasing Department of the City of New York. As a management consultant, heading the firm of Albert Pleydell Associates, Inc., he has observed and counseled scores of purchasing departments in a wide variety of public and private enterprises. Speaking from experience and with authority, he has no magic formula to solve all administrative problems, but does have a broad knowledge and keen appreciation of the basic principles to be applied. Staff meetings are not a cure-all, but they can be a valuable administrative tool—if wisely used. Here's what to do—and what to avoid.

Recognize These Types?

1. *Let's get hitting on all eight cylinders!*

This is a supercharged (he thinks) pep talk by the Purchasing Agent. Dealing in glittering generalities, he evokes not one spontaneous observation from his passive audience. Some of the observations made after the meeting are not fit for delicate ears.

2. *Sewing Circle.*

This is made up of little bits of chit chat, office gossip, and a few pious resolutions that never come to anything. Lacking any sense of purpose or goal, a meeting of this kind is reminiscent of the popular hero who jumped on his horse and rode off in all directions.

3. *Mutual Congratulations.*

This one is self-explanatory, if nothing else. Boy, are we good! Progress is reported (in somewhat unspecific terms), backs are slapped, and everybody feels that cooperation is a wonderful thing. Maybe there's a little feeling of self-pity, too, that other departments do not share our high regard for ourselves.

4. *On again, off again.*

As its name implies, this one is somewhat spasmodic. It starts up when things around the office are not as busy as usual. When the pressure is on, however—and when there are important matters that could profitably be discussed—it somehow gets lost in the shuffle. Too busy. By the time it starts up again, nobody can remember what was decided at the last meeting. Perhaps this is just as well.

5. *Grand Central Station.*

This one has all the tranquillity of a five-alarm fire. Phone bells ring and messengers swoop in and out like bats out of Hades. The staff members leave and rejoin the meeting so often that the only guy who seems to have any permanence is the window cleaner. Scarcely the atmosphere for consistent, logical thinking and a meeting of the minds.

6. *Cards on the table.*

"Let's put our cards on the table, boys. If you have any grievances about the way things are run around here, just come right out and say so. I respect a man for having the courage of his convictions." Yeah? The first bird who opens his big mouth might as well start looking through the help wanted columns right now!

7. *Let's send for Joe.*

This one starts off as a profound discussion about, say, the use of some particular piece of office equipment. However, throughout the discussion there is a sprinkling of such phrases as "assuming that", "provided that", or "if we can believe that", etc. Eventually they get wise to the fact that they are all talking around the subject because they have no real data to go on. Somebody suggests that they send for Joe (who should have been invited to the meeting in the first place) because old Joe has all the facts and figures. Joe arrives and

settles it quickly by announcing that there is no problem. The darn thing was sold last week. Meeting adjourns.

8. *Is this trip really necessary?*

Just the opposite of the last one. Half the boys haven't an inkling of what it's all about—and care even less. But everyone has to be at the staff meeting. That peculiar glint in a few pairs of eyes isn't concentration; it's merely the outward sign of a yoga-like trance—an art acquired with patience over the years.

9. *It's all for the cause.*

The front office has decreed that there shall be staff meetings. Staff meetings there are, but nobody has anything to say. The purchasing agent who has to provide minutes of the meeting to the front office moodily surveys the blank (almost moronic, he thinks) expressions in front of him and wishes he had stayed in the Army.

10. *From here to eternity.*

Then there's the staff meeting that somehow got mixed up with a six-day bicycle race. It goes on and on, despite the fact that constructive comment ceased long ago. The only way out of this one (short of the obvious way of calling it a day) is for some enterprising staff member to throw a fit or start barking like a dog.

There's a Brighter Side

Of course these are exaggerations. Furthermore, staff meetings are rarely so clearly "typed" as I have flippantly suggested above. A poor staff meeting, however, will probably include one or more of the weaknesses I have outlined. A successful one will be organized to eliminate, or at least to minimize, these elements as far as possible.

Before going into further discussion of what makes a good staff meeting, I think we should face the fact that some administrators will never profit from holding staff meetings. This is in no way a reflection on their administrative abilities. The fact is that people get things done in different ways according to their personality and temperament. Some people do not like the cooperative approach to problems. They feel that they are paid to do the thinking and make the decisions, and that anything else is an evasion of their responsibility. A purchasing agent in this category will be wasting his own time, and that of everybody else, by even giving lip service to the matter of staff meetings. He had better forget the whole idea and get on with the job in the way that he feels is most effective.

What Makes A Good Executive?

By Albert Pleydell

1. He possesses moral integrity. His superiors, subordinates and equals know that they can trust him completely.
2. He knows his job.
3. He gets things done. He knows his staff, their strengths and weaknesses. He knows how to call forth the best from each one.
4. He doesn't try to do everything himself. He delegates responsibility with commensurate authority and holds the delegates accountable for results.
5. He gives credit where credit is due. He doesn't brush off good ideas, nor does he steal them.
6. He is fair and impartial. He has no favorites. He is friendly but not familiar with subordinates.
7. He always seems to be ahead of things. His foresight and planning make life less hectic, so that his staff can honestly feel that their energies are being spent on productive effort.
8. He has a keen imagination, together with a saving sense of humor.
9. He has the ability to inspire others to want to work.
10. He has a sympathetic understanding of the other fellow's problem.

But for those who like the cooperative approach, there is much to be said for the staff meeting. Wisely planned and used, it can be an extremely valuable administrative tool. As with all tools, there are certain basic techniques which must be observed in order to get the best results.

Factors to Consider

In planning for staff meetings, or in evaluating such meetings where they already exist as a departmental practice, consideration must be given to several factors:

1. *Purpose.*

Most of the ineffective meetings fail because they lack a definite purpose. The purchasing agent should ask himself: "What do we hope to get out of this meeting? How will it help us, as a department, to do a better job?" The answers to these questions will vary from company to company, and from time to time, depending on the circumstances, but from them the purpose of the meetings should be clarified and determined.

2. *Form.*

What form are the meetings to take? There are several different possibilities—a policy consideration session; a weekly "briefing"; the solving of common or specific problems; a grievance committee; a planning group; a methods and procedures unit, etc. Perhaps they should be a combination of several of these forms. If so, the fact should be clearly recognized.

3. *Approach.*

The reason why the form of the meetings should be clearly determined is because the approach to any particular item on the agenda is considerably influenced thereby. Let me illustrate by taking the hypothetical case of a company which has been committed to the policy of reciprocal buying, but where the

front office has decided that this policy is to be abandoned in favor of open competition. In such a case, it is likely that the topic of a staff meeting might be "Seeking Competition". Since this is a change in company policy, it could be approached by the "Policy" type of meeting, stressing the point of view of its effects on policies within the department. The "Briefing" type of meeting would call for a statement from the purchasing agent explaining the reasons for the change and going into its implications in regard to the work of the department. The "Methods" type of meeting would approach the same topic from the point of view of the mechanics involved in seeking, receiving, and tabulating bids, etc. By predetermining the angle of approach, the discussion is kept within bounds and doesn't wander all over the lot. The participants carry from the meeting a distinct, specific understanding to guide their thinking and action. Furthermore, it becomes possible to limit the meeting to those staff members who are directly concerned.

4. *Schedule.*

The next step is to decide upon a definite day and time for the thereafter as far as possible, to hold to that schedule. This not only makes for stability and regularity, but does much to obviate situations where somebody either forgets to come, or involves himself in a conflicting appointment, or where half the staff members are not notified. It also makes possible the scheduling of routine department activities to leave the meeting time free as a recognized, integral part of the department's program.

5. *Terminal facilities.*

A limit should be placed on the time that the meetings are to last. When it is recognized from the start that time is limited, there will be a tendency to cut out the frills and get right down to business. If there isn't much to talk about at any particular meeting, don't try to pad it out for the sake of appearance; it serves no purpose. If the topic cannot be completely covered in one meeting, come to a logical stopping place and hold the balance of the discussion over to the next meeting.

6. *Advance information.*

A common cause of aimless discussion is the fact that members come to the meeting "cold". To prevent such a situation, it is wise to let the agenda be known in advance so that, by the time of the meeting, everybody will have been doing some thinking about it, even if only subconsciously. It is also a good practice to encourage the staff to contribute suggestions for the agenda. Apart from the fact that some good ideas are likely to turn up, the practice increases the sense of participation and thus makes for successful meetings. You can frequently spot the worker who is doing some serious thinking about his job by the suggestions offered.

7. *Physical setting.*

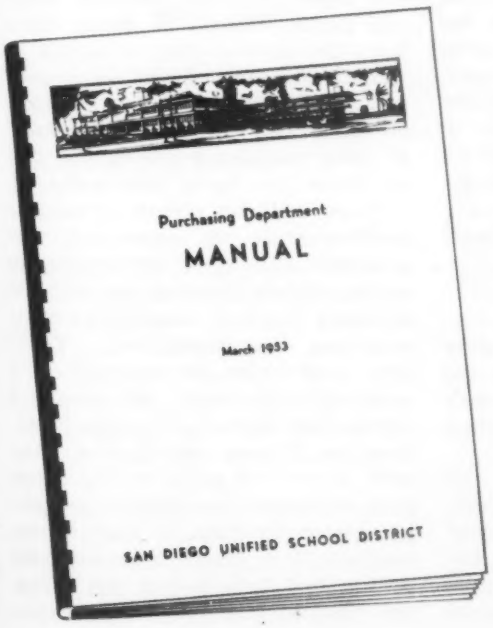
Ideally, meetings should be held in a quiet room, without a telephone and with a minimum of outside interference. Of course, every organization is not so fortunate as to have such a facility. However, a lot can be done to get the necessary effect by having phone calls screened, appointments with visitors properly scheduled, and subordinates conditioned to holding over their queries until after the meeting is over.

8. *Action.*

Recommendations arising out of the meeting should be given prompt consideration and the group informed whether they have been approved or disapproved. If executive action is required to put an approved recommendation or procedure into effect, see that this action is taken promptly and with a word of credit to the person who originated the idea or contributed to its development. When this policy is not followed, the resulting frustration soon convinces the staff of the utter futility of staff meetings.

Finally, and most important of all, remember that the staff meeting is only a useful tool. It in no way relieves the purchasing agent of final responsibility for the performance of his department. Keep that thought in mind at all times as you put the staff meeting to work for you.

Purchasing Department Manual



A VALUABLE aid in purchasing for the San Diego (Cal.) City School System, and in training of new staff personnel, is the recently developed Purchasing Department Manual, compiled by Purchasing Agent E. S. Thompson.

The manual, comprising 74 mimeographed pages, plus topical index, with cover sheets and plastic binding, has sixteen major chapter headings: Legal Basis for Operation; Organization and Duties of Personnel; Requests for Purchase; Bidding Procedure; Purchase Orders; Contracts; Filing; Salvage; Cafeteria Food Buying; Revolving Fund Stock Items; Repair of Equipment; Telephones; Magazine Subscriptions; Capital Outlay Budget; Postage; and Miscellaneous.

An appendix contains specimen copies of all printed forms used by the Department. Flow charts incorporated at appropriate points in the text graphically show the processing and distribution of major forms in accordance with prescribed procedure for ordering, receiving, and approval of changes.

Copies of the manual are individually numbered and recorded as to location, so that any subsequent revisions can be made in all outstanding copies, thus keeping the information accurate and up to date at all times.

Quick decisions are not always wise decisions

RELAX!

By Dr. Donald A. Laird

LATE one evening a fire broke out in the main office of a western railroad. The self-made president was in his second floor office at the time and did not know about the fire until smoke started pouring into the room.

A man of action, he grabbed a typewriter and dropped it out the window, then groped his way down the smoke-filled stairway, carrying a basket of waste paper to safety.

This red-headed president was a pusher who raced through life. Empire builder though he was, he was as tensed as a terrier chasing a squirrel. Evening work in his office was one evidence of his tenseness; he couldn't let down, so kept right on working. The smell of smoke was a call to immediate action—any sort of action.

Carrying the waste paper to safety in the emergency is an example of the over-quick decisions which are typical of many tensed people.

As you compare tensed and relaxed executives of your acquaintance, you will notice the hair-trigger decisions of the tensed ones. They are quick, but inclined to go off half-cocked—scurry, scramble, hustle! Some of this may be necessary at times; some of it is worse than waste, most of the time.

Relaxed business people, in contrast, usually think it over before acting. Taking time to size up the better course of action makes them more collected in emergencies—and more tolerant and calm. They have a better command of situations as well as of themselves.

The tensed person who jumps the gun can be expected to make many unnecessary actions. And many of his actions will not be as wise as they might have been. Crises are thus caused which add new stress and more hair-trigger responses.

On the other hand, the relaxed person who does not hesitate to hesitate before acting, is more likely to choose the better course of action. And the emergency is resolved because no extra stresses are built up.

Delaying Actions

Relaxed thinking is easier after one has started the habit of delaying actions long enough to collect one's wits and act serenely rather than frantically.

Practice in this habit can be started the first thing in the morning. For instance, just take your own sweet time to turn off the alarm clock. The tensed person pulls himself together on the first sound of the alarm as if he had been given an electric shock, and lunges stiffly to shut the plagued thing off.

Here is the relaxed, delayed action method: Let it jangle away for a while—the clock won't wear out much sooner. Pretend you even like the noise. In fact, it will not sound nearly as annoying if you keep relaxed as it would if you became tensed. Take time to stretch in bed, superior to the summons, while you flatter yourself for being wiser than the person who scrambles to shut it off. Then slowly reach over and silence it, reminding yourself of other delays you can practice in other responses during the day to which you have been wakened.

There will be plenty of opportunities—such as answering the doorbell. This does not ordinarily require much decision or advance thinking. Nor is it, usually, a matter requiring breathless haste. You'll give your caller the courtesy of a reasonably prompt response, of course, but instead of rushing headlong as if you expected a man with a pot of gold at the door, keep composed and take your time to answer the ring. If your visitor makes a few more impatient jabs at the bell before you get there, the chances are that he is over-

tensed himself, and is thereby at a disadvantage.

Don't hesitate to hesitate when the mail arrives, either. Some people drop everything and paw into the mail as if they expected the most important news of the century. The relaxed person can delay opening or reading the mail without being distracted from other work. Practice putting off reading your mail until you have finished the job at hand; you'll do a better job because your mind isn't cluttered with a lot of new problems, and you'll get to the new mail with a clearer mind as well. After all, it's been a day—or two, or three—in getting to you, and a few extra minutes won't make any great difference.

Telephone Jitters

Then there are telephone calls, which the tensed person scurries to answer before the first ring is over. The relaxed person keeps his serenity, his pace, and his breath, and pauses long enough before speaking to put a smile into his voice.

Spur-of-the-moment telephone calls are a habit with many tensed people. They put through calls on the first impulse, dive right into talking without any clear plan of what would be best to say—and often without much to say. They just felt that Mr. X should be talked with, and neglected to delay the call long enough to think why, or how, or what to say.

The relaxed person delays his outgoing phone calls until he has several that can be made in a batch—a project to be accomplished with the thoughtful concentration it deserves. Meanwhile, he plans what he wants to say on each call, as the thoughts occur to him, perhaps making notes on a memo pad. This keeps him from overlooking important points, and also from unwise conversation. And when he sits down to make the batch of calls, he gets through them more expeditiously and effectively—and often discovers that some which seemed important an hour before can now be skipped to the advantage of everyone concerned.

There are many other details of daily life and work which can be used to practice considered rather than hair-trigger responses.

The Pause to Think

Delaying and planning telephone calls illustrates the purpose of hesitating until one can choose the better course. It is not a habit of procrastination and inaction. A paramount psychological purpose of the delay is to form the habit of considering sanely before acting —then acting soundly and efficiently. The delay is not merely to give one a few minutes for relaxing, although that is one dividend. As a business asset, the relaxation makes for better action.

By thinking and planning, the action will likely be more appropriate. The action can be taken with more self-confidence than if it were an impulse of the moment. The thought-out action will cause less additional stress than a hasty action that has to be corrected or patched up later.

It is the tensed, unthinking man of action who says, "There isn't time to figure out what to do, but let's do something right away and keep things rolling." He is likely to have a motto *"Do it now"* constantly before him at his desk.

If you have such a motto, perhaps you ought to drop it into the waste basket. A safer motto would read: *"Don't hesitate to hesitate and think before you do it."*

Honest mistakes? Inadequate system?
Carelessness? Dishonest personnel?

PLAN—to Avoid Inventory Losses

By David Markstein

WHETHER they are due to carelessness, bookkeeping errors, inadequate system, or plain downright dishonesty, inventory shortages are costly. They may represent an actual loss of paid-for property, or they may entail production delays which are annoying and costly, too.

Some purchasing agents shrug them off in the belief that as long as people are subject to human mistakes and shortcomings, inventory shortages will occur. But like other losses due to carelessness and errors, shortages can be substantially curtailed—often, completely eliminated.

Many shortages occur through accounting errors, due not to any dishonesty or embezzling tendencies of bookkeepers and clerks, but rather to carelessness and mistakes in figures. Some of the ways in which accounting errors can lead to shortages and to consequent losses are (1) Charging or crediting the wrong accounts or departments for purchases or withdrawals of materials and supplies; (2) figure errors in extending reports and invoices; (3) incorrect figures put down by mistake on the inventory records; (4) failure to post entries covering each transaction.

How can shortages of this variety be eliminated? The periodic audit of all books, by outside auditors, is a sound business practice. See that the auditors look over incoming materials records and purchase figures with an eagle eye. Call mistakes to the attention of employees. If a pattern develops showing that one operation or one employee causes many of the paper losses, take the necessary steps to correct that situa-

(*Please turn to page* 350)

"Mrs. P. A." By Wayne Pennington

An inspector on Lederle's packaging line discusses bottle construction with Mrs. Entwistle, whose department bought the packaging machinery in the background, as well as the ingredients, bottles, caps, labels, and packages for the product.

MANAGER of the purchasing department at Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y., heading a staff of 36 persons, is a calm, poised, and exceedingly competent woman, Mrs. Elsie Entwistle, who enjoys and takes pride in her job, just as she enjoys and takes pride in her home and flower garden.

Hers is no "peanuts and pennies" operation. She is responsible for the spending of over $25 million a year for the equipment, materials and supplies required by one of the world's largest medical research and pharmaceutical concerns, employing some 4,500 people. Purchasing, a highly specialized activity in itself, becomes compounded in complexity within the chemical field, through difficult terminology unusual and constantly changing requirements. But "Mrs. E", as the men in her department know her, has kept up to date on her job for 34 years.

During her long career with Lederle, Mrs. Entwistle has purchased items ranging from animal dandruff and chicken feathers (for allergenic products) to carloads of heavy engineering equipment. Flying select rabbits in from California or a refrigerator part from Massachusetts is all part of her daily work. As an example of the detail she must master, Mrs. Entwistle cites purchases for the packaging department, which in itself requires 1800 different items. Besides maintaining contact with alternate suppliers for each item, to guard against shortages and production failures, she must be aware of such details as these: Proper clearance between the average bottle and its folding box is 1/64". Even a slight variation will cause a slowdown on the packaging assembly lines. Her department is held responsible literally for properly designed bottlenecks, as well as for avoiding bottlenecks in

(*Please turn to page* 358)

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N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

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Options, Offers, Agents, and Warranties

By Leo T. Parker

A FEW weeks ago I received an interesting letter from a purchaser in part as follows: "I have read your legal writings in PURCHASING, but I have not found any discussion of so-called "double" agency which arises when a purchaser authorizes a broker as his agent to purchase merchandise, and in later offers and counter-offers the broker also acts as the seller's agent. What are the legal rights of purchasers under these circumstances? Can the broker make a binding contract for both the buyer and seller by signed contract or memorandum?"

Briefly, the answer is: A broker may automatically become agent of a seller, although originally he was appointed to act as the purchaser's agent. This situation is lawful, if both the buyer and seller know the true facts. However, the broker cannot obligate either the buyer or seller unless he has special authority to do so.

Modern higher courts consistently hold that at the beginning of a transaction the broker is the agent of the purchaser who first employed him, but he becomes the agent of the seller also, when the latter instructs him to close the bargain, or deals with him as representing both parties, or subsequently ratifies what, as agent of both parties, he has assumed to do. When so authorized the broker has, like other agents, implied authority to do whatever is necessary and proper to carry his authority into effect, and close the deal. Under these circumstances the broker may go so far as to sign a valid memorandum or other writing within the scope of his expressed or implied authority from both the buyer and seller.

On the other hand, if the broker is authorized to represent the purchaser in a single transaction, he is deemed to be a "special" agent, and he cannot bind the seller unless he keeps within the limits of the authority conferred upon him. In other words, a broker is a "special" agent and cannot bind his employer to a contract in terms not authorized by the employer. It is, however, fundamental that the subsequent ratification by the purchaser of an unauthorized contract is equivalent to a previous authorization. It is the duty of the purchaser at once to disapprove an unauthorized contract made by a broker in his name or on his account, and this duty is more imperative when the unauthorized contract is made by a broker in the execution of a conferred power in a mode not sanctioned by its terms.

UNDER SOME CIRCUMSTANCES A BROKER MAY ACT AS THE LEGAL AGENT FOR BOTH BUYER AND SELLER

Implied ratification of a contract made by a broker may result where the purchaser remains silent. In such case, the purchaser has no right to delay if he intends in any contingency to repudiate the broker's contract. He cannot lie by and seize the benefit of it if unprofitable, and renounce it if otherwise, at his election. In other words, if the contract when brought to the purchaser's knowledge is not at once disapproved, a ratification must be presumed with all the consequences which follow.

Custom of the Trade

Sometimes a trade custom very importantly affects the legal rights of both the buyer and seller with respect to being obligated by acts, contracts and memorandums of a broker.

For example, in Meier v. Goebel-Reid Grocery Company, Mo. App. 20 S.W. (2d) 605, the evidence showed that there was a rule and custom of the trade in St. Louis that when a broker sends out copies of a sales memorandum to both the buyer and seller, which does not correspond with the terms and conditions of sale, the seller or buyer may disapprove or reject the memorandum offer. In other words, as this was recognized trade custom, the broker was impliedly authorized to send out the memorandum, but neither the buyer nor seller were obligated unless both agreed to the terms, price, etc., suggested by the broker. This court said:

"Our Supreme Court held that a broker for the purpose of signing

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Says Duncan Miller: "I produce some 600,000 board feet of lumber a year. My 100-horse diesel drives all my equipment. I use Cities Service Diesel Fuel because it gives me all the power I need and burns so cleanly to provide easier equipment maintenance.

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You don't have to be a sawmill operator to realize the value of Cities Service one-source buying for the finest, most economical power and lubrication, and the services of our expert Lubrication Engineers!

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the memorandum of the sale is the agent of both parties to the contract which he makes, but that in other respects he is only the agent of the party originally employing him."

Also see Fruit Auction Company v. F. Quattrochi and Son, 200 S. W. 709. This court announced the general rule that a broker is ordinarily a special agent who derives his power and authority to bind his principal from the instructions his principal gives him, and that he cannot bind his principal beyond the limit of the authority conferred upon him.

And this same law is applicable where a broker represents both the buyer and seller.

About a year ago, the higher court rendered an unusually interesting and informative decision on this point of law.

For example, in Amos-James Grocery Company v. Canners Exchange, 250 S.W. (2d) 171, the Amos-James Grocery Company sued the Canners Exchange for heavy damages contending that the latter had entered into a contract August 11, to purchase 2200 cases of No. 2 water pack blackberries, which would meet government specifications, at a price of $1.85 per case, F.O.B. Bolivar, Missouri. The grocery company, or purchaser, contended among other things that the broker it appointed to close the deal automatically became agent of the seller, and that when representing the seller the broker executed a sales memorandum by which the seller became bound to deliver 2200 cases of No. 2 water pack blackberries which would meet government specifications at $1.85 per case. The court said:

"Thus we hold that the brokerage company was acting for both the seller and buyer under the authorities cited herein."

Although it was admitted that the broker was properly authorized to represent and act as special agent for both the buyer and seller, yet the testimony failed to prove that the seller had authorized the broker generally to close a contract containing a clause that the seller guaranteed that the berries would pass government inspections.

Therefore, the higher court held the seller not liable in damages to the purchaser because the broker had exceeded the authority given him by the seller, and no valid contract was made. In this respect the court said:

"Granting that Klein & Adderton, as brokers, were authorized to execute a sales memorandum, showing the terms of the contract, as agent of the defendant (seller), yet, we find that the authority of the broker to so execute said sales memorandum is limited to the terms authorized by defendant (seller). In this case the evidence must have shown that the brokerage company, in executing the memorandum of sale, had authority to include in that memorandum that the berries in question must meet government specifications and that the berries were to be shipped in the cases furnished by the government. We think the evidence clearly shows that Klein & Adderton acted outside the express authority granted by defendant (seller)."

This court laid down another unusually important point of law relating to "offer and acceptance". This court explained that an "option" is an offer binding on optionor until the time stipulated for election has expired. There must be a valid "consideration" for such option. If the evidence clearly shows that there was no "consideration" given for the option, there was only an offer to sell.

BUYER'S FAILURE TO GIVE SHIPPING INSTRUCTIONS MAY CONSTITUTE A BREACH OF HIS CONTRACT

It is well established law unless one who receives an ordinary offer accepts it unconditionally, there can be no valid and enforceable contract. In other words, in order to establish a valid contract there must be an offer on the part of the seller and an acceptance of that offer, according to its terms, on the part of the buyer.

It is essential to a contract that the nature and the extent of its obligations be certain. If an agreement is uncertain it is because the offer was uncertain or ambiguous to begin with, for the acceptance is always required to be identical with the offer, or there is no meeting of minds and no agreement. See Huttig v. Brennan, 328 Mo. 471, 41S.W (2d) 1054.

This court also explained the legal difference between an option and an offer. The court explained that with an option a purchaser must have given some "consideration", as money, in order to compel the seller to sell the specified merchandise at a definite price within a period of time stipulated in the option, whereas if a purchaser makes an "offer" to a seller, there is no valid and enforceable contract until the seller unconditionally accepts the purchaser's offer. Hence, an option actually is a legal situation under which the purchaser has paid the seller some "consideration" which entitles him to decide, according to the terms of the option, whether or not he will purchase and pay for the specified merchandise, and comply otherwise with all details of the option.

Offer is Accepted

Once either a purchaser or seller unconditionally accepts the other's offer, a valid and enforceable contract is in effect. Failure of either the buyer or seller to fulfill the exact terms and obligations of the contract entitles the other to sue and recover damages. Recently a reader asked an interesting question involving the right of a seller to demand a purchaser to order out merchandise when no definite delivery date is specified in the contract. This reader wrote: "Several months ago I signed a contract to purchase a large quantity of merchandise. This contract contained a clause in which the seller agreed not to ship the merchandise to me until I gave him notification. Another clause clearly states that the time for delivery of the merchandise was to be at my option or direction. I have not ordered the seller to deliver the merchandise because I decided I do not want it. Now, the seller threatens to sue me for damages. Am I liable in any way?"

According to a higher court decision rendered a few weeks ago the answer is, yes.

For illustration, in Arnolt Corp. v. Stansen Corp. 189 Fed. (2d) 5, the testimony showed facts as follows: A buyer signed a contract to purchase 15,000 lawn sprinklers at $10.10 per unit. The order contained the provision for shipment: "Ship as directed."

The seller proceeded to tool up so that it might assemble or manu-

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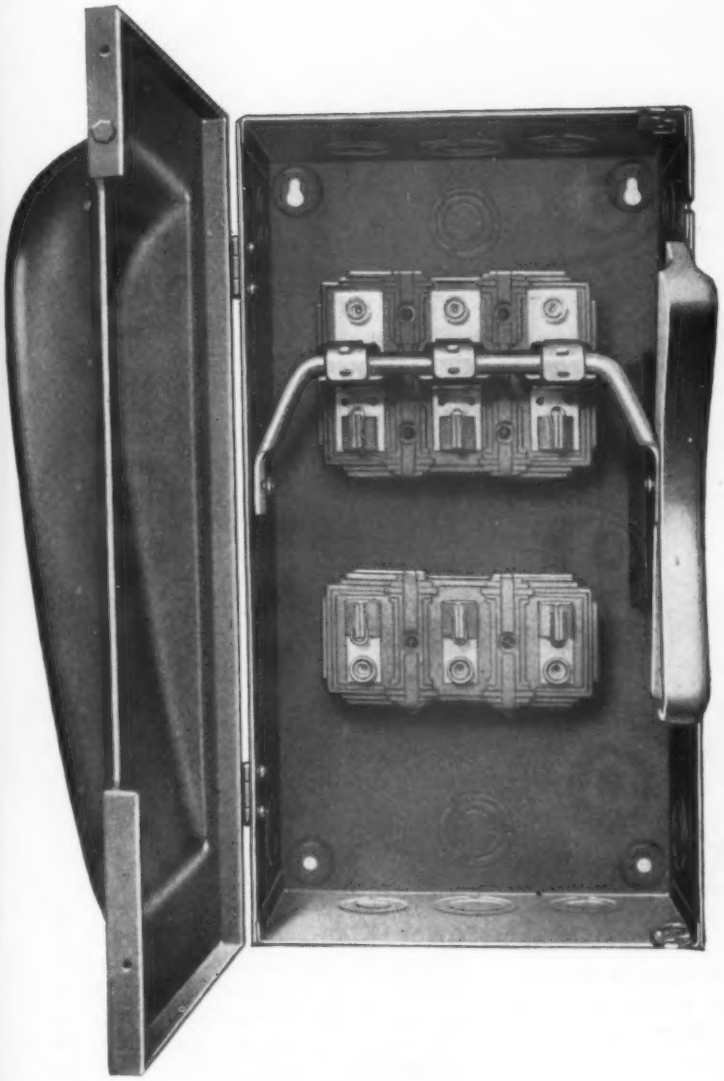

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facture the sprinklers. During the month of June only two shipping directions were issued by the purchaser to the seller. The second directive for shipment was based on an order for 350 sprinklers. During the month of July the seller received and carried out shipping directions for only 1500 sprinklers. During the month of August the record shows that only eleven sprinklers were ordered to be shipped, all the directives being dated August first and second.

It was in this month that the purchaser ordered the seller to cease production because he had "no further orders at the time."

In other words, the purchaser refused to "direct" the seller to make further deliveries of lawn sprinklers.

The seller sued the buyer for heavy damages. In holding the purchaser liable, the court said that a purchaser cannot avoid liability for breach of the contract by failing or refusing to order a seller to ship or deliver the purchased merchandise.

Purchaser Breaches Contract

For comparison, see the following cases:

In Colvin v. Weedman, 50 Ill. 311 the court held that when a contract of sale provides that the time and place of delivery shall be at the option or direction of the buyer, it becomes the duty of the buyer to give notice or direction as to the time and place of delivery. He is liable if he fails to issue the notice of direction for delivery of the goods to the seller.

In Weill v. American Metal Company, 182 Ill. 128, it was held that the refusal or failure of a purchaser to give shipping directions was a breach of a contract of sale in which the purchaser had an option as to the place of delivery.

In Hinckley v. Pittsburgh Bessemer Steel Company, 121 U. S. 264, a purchaser agreed in writing to purchase 6000 tons of steel rails from the Pittsburgh Bessemer Company. The rails "are to be made of the best quality of Bessemer steel, and to be subject to inspection as made and shipped, and to be well straightened and free from flaws, and to be drilled as may be directed."

The purchaser was not ready to use the rails and refused to give drilling instructions. This was held a breach of the contract and the purchaser was required to respond in damages.

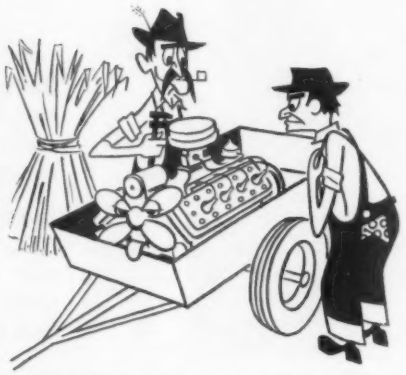
Compare Posey v. Scales et al., 55 Ind. 282; and Kingman & Co. v. Hanna Wagon Co., 176 Ill. 545, 52 N.E. 328.

Kawin & Co. v. American Colortype Co., 243 F. 317, involved a contract for the sale of five million dollars worth of Christmas and New Year cards. It provided that the goods be delivered as ordered, all to be taken by December 15.

This court held that the contract did not require or contemplate that the seller should, without order from the buyer, tender the entire quantity on or before December 15.

Hence, it is well established law that where the buyer has by the terms of the contract an option as to the time or place for receiving the seller's performance, it is a condition qualifying the seller's obligation that the buyer shall have given shipping directions or other notice of his choice.

In other words, the mere fact that the purchaser refuses to order the seller to make delivery of purchased merchandise, although by the terms of the contract the purchaser has this privilege, yet the purchaser commits a breach of the contract by his failure to order shipment of the merchandise, and pay therefor the agreed contract price.



FITNESS IS IMPLIED EVEN ON USED EQUIPMENT WHEN SELLER IS INFORMED OF ITS INTENDED USE

Law of Implied Guarantees

During the past few months I received letters from various purchasers, and also other purchasers, with whom I talked, personally asked certain important legal questions on implied guarantees.

A higher court rendered a decision this month which fully answers many of these questions as follows: Under what circumstances is a seller liable on an implied guarantee? Is an implied guarantee effective as to used merchandise and equipment? Who decides whether an implied guarantee is applicable if the buyer and seller give contradictory testimony? If the case goes before a jury which decides in favor of the purchaser, has the seller a good chance of having the verdit reversed by appealing to a higher court? Is an implied guarantee based on common law or State Statutes?

See Wallower v. Colorado Machinery and Supply Company 247 Pac (2d) 682. I shall for the benefit of readers review this outstanding decision in detail. The testimony disclosed these facts: The Uniform Sales Act provides that where the buyer makes known to the seller the particular purpose for which goods, merchandise or equipment are required, and it appears that the buyer relies on the seller's skill or judgment, there is an implied warranty that the goods, merchandise or equipment shall be reasonably fit for such purpose.

For many years the Colorado Machinery and Supply Company had operated a business selling new and used farm equipment, power units and electric equipment. A man named Elder owned and operated the business which was the agent for Heil Manufacturing Company, which produced and sold Heil dryers for processing alfalfa hay.

In the spring one Wallower consulted Elder concerning the purchase of a Heil dryer, a mobile machine for rapid drying of hay, to be available for processing farm feed. This unit required an additional power unit and grinder, various kinds of which Elder had on hand. Through Elder, Wallower purchased the dryer from the manufacturer and went to Milwaukee and there completed the negotiations and returned to Elder's place of business with the dryer.

Before leaving to get the dryer unit, Wallower arranged with Elder for a used motor and a used grinder to be placed upon a trailer with other equipment, to be ready for operation upon his return. The cost of the trailer was $8,500.00 on which Wallower made a down payment of $3,500.00 and arranged with the manufacturer for payment of the balance. The agreed purchase price with Elder for the mounted motor and grinder was $1,907.40, on which Wallower paid $500.00 when he signed the order, $435.00 when he returned from Milwaukee with the dryer, and secured the balance due by giving a chattel mortgage

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on the motor and grinder in the amount of $1,005.20, payable $67.02 monthly for fifteen months.

The motor and the grinder were used equipment and, when put to the field test, failed to operate properly. After continued efforts to repair and make the equipment operate satisfactorily, Wallower was never able to make it produce its fullest capacity and, on account of shutdown and other items, he sustained loss and damage. Finally he gave Elder notice of rescission of his contract, made demand for return of the purchase-price money, and finally wrote a letter of rescission.

Counterclaims for Damages

In the resultant suit Wallower asked the court to decide that, through Elder, the Colorado Machinery and Supply Company had breached an implied warranty because Elder had sold him the motor and grinder with the specific knowledge that they were to be used in connection with the Heil dryer and he asked for a return of his down payments, sales tax, a cancellation of his note, and special damages.

Elder testified that the equipment was replevined from Wallower and that the equipment was sold at public auction for $406.04, which sum had been applied upon the balance of Wallower's purchase-price note, leaving a deficiency of $695.96 for which he asked the court to hold Wallower liable.

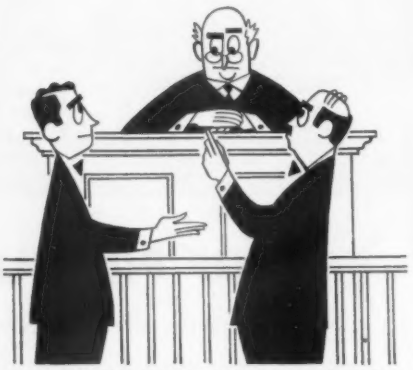
Hence the suit was condensed into a simple problem, as follows: Wallower claimed that through Elder, the Colorado Machinery and Supply Company was responsible on an implied guarantee that the equipment was reasonably suitable for the purpose for which Elder knew it was to be used. Wallower asked the court to award him a judgment of $1,907.40 paid on his note with interest and damages of $582.48 which he paid out for materials and labor because of the breakdowns in the motor, and $2,668.20 for loss of earnings from the Heil dryer due to the inability of the motor, which Elder had sold him, to meet the reasonable requirements for which it was needed, as he had explained to Elder.

Decision Reversed, Sustained

After considering all testimony, the jury rendered a judgment for Wallower. On appeal to the next higher court, the jury's verdict was reversed on the grounds that the Uniform Sales Act did not apply, because Wallower had the same right of examining the motor as Elder did; that Wallower did not rely on Elder's advice, but acted upon his own judgment and the advice of others; that he bought the motor "as is"; and finally, that the provisions of the Uniform Sales Act as to implied warranties is not applicable to used merchandise and equipment.

Then Wallower appealed to the higher court contending that the jury's verdict was correct. He asked the higher court to reinstate the jury's verdict holding the Colorado Machinery and Supply Company liable for breaching an implied guarantee that the used equipment was reasonably fit for his intended uses and purposes.

The higher court reinstated the jury's verdict, thereby holding the Colorado Machinery and Supply Company liable to Wallower.



THE HIGHER COURT USUALLY SUSTAINS A JURY VERDICT EXCEPT IN CASES OF OBVIOUS ERROR OR PREJUDICE

With respect to the Uniform Sales Act being applicable to both used and new merchandise and equipment the higher court held in the affirmative, saying:

Uniform Sales Act Applies

"Nothing could be clearer than that the terms of the Act are directed to the sale of all chattels. There is no exclusion of "used" goods in the definition of property to be covered by the Act and when the trial court ruled that the Act did not apply as to used or second hand goods, it was equivalent to reading into the statute an exception which the legislature, in its sole province, did not see fit to do. If we followed the contention of defendant (Colorado Machinery and Supply Company) by holding that the Uniform Sales Act was not applicable to used goods under proper circumstances, we would be indulging in judicial legislation, and if we further held that the circumstances of the case and much of the undisputed testimony were not sufficient to sustain the claim of an implied warranty, we then would be trespassing in the jury's exclusive field."

Also the higher court held the Colorado Machinery and Supply Company had breached its implied guarantee, and in this respect said:

"The next, and controlling, question in this controversy is: Was there an implied warranty on the part of Elder, the seller? The sales act clearly provides for an implied warranty that the goods be reasonably fit for the uses, made known to the seller by the buyer, for which they were purchased."

Although Elder testified that Wallower selected the motor and grinder himself and used his own judgment as to its operative condition, the jury believed Wallower's testimony that he had purchased the motor and grinder after explaining to Elder the uses he intended to make of it. Hence, believing Wallower's testimony, the jury decided that the Colorado Machinery and Supply Company was liable on an implied guarantee. The higher court approved the jury's verdict, saying:

Jury Believes Buyer

"It is to be noted that all conflicts were resolved in Wallower's favor by the jury. It was unmistakably shown that Wallower made full explanation to Elder as to the purposes for which he was contemplating buying the entire needed equipment. He purchased the dryer through Elder upon advertisements given him by Elder and made the first down payment to him for the dryer.

"As to the other equipment, namely, the motor and grinder which Elder had on hand in the form of used equipment, there is a conflict as to whether Wallower selected the motor and grinder, or whether Elder made the selection and Wallower relied thereon. Of course, this conflict was clearly presented to the jury which was fairly instructed thereon and it seemed to believe Wallower's version of the transaction. The evidence shows that the motor was started and run idle for a short time in Wallower's presence, but it is also disclosed that at no time did Wallower have an opportunity to inspect the motor when operating under a load which would

(*Please turn to page* 338)

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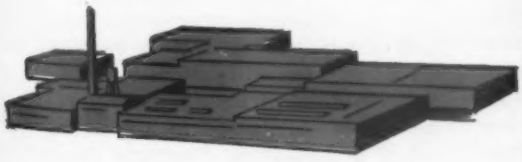

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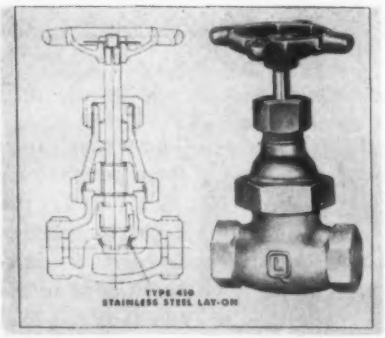
New Silicone Solution Makes Materials Water-Repellent

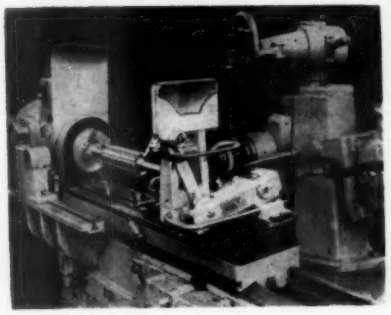
Dow Corning XS-1 is a convenient means of rendering such materials as paper, wood, glass, asbestos, brick and concrete water-repellent. Suggested applications include the treatment of paper plates and cups; glass or insulator bodies; asbestos cloth or paper; masonry, brick, concrete or mortar. It is prepared from the 25% solids solution of a water soluble silicone and has the advantage that it can be mixed with slurries such as paper pulp or asbestos fiber dispersions. It was developed by Dow Corning Corp., Midland, Mich.

Increased Efficiency, Longer Life in New Valve Line



The Lunkenheimer Co., Cincinnati, Ohio, has a redesigned line of 600 lb small steel globe, angle and check-list valves. They incorporate a "full-way" plug type disc with increased seating width and a new chromium stainless steel seat which eliminates conventional seat rings. The new disc is made of type 420 chromium stainless steel and has a 500 Brinell hardness; the "lay-on" seat, of type 410 chromium stainless steel, containing 13% chromium, has a 350 Brinell hardness. It is stated that combination of these exceptionally hard metals prevents disc and seat scoring, and greatly increases valve efficiency and service life.

Wheel Grinding Attachment Applied to Spline Grinders



To meet the increased requirements for greater accuracy and fidelity of involute shape, Pratt & Whitney, West Hartford 1, Conn., has effectively and efficiently applied its diaform wheel forming attachments to spline grinding machines. Diaforming is an easy, fast and inexpensive procedure which form-trues grinding wheel contours accurately and insures re-truing of any given form to the same degree of accuracy as often as required. Costly, time-consuming "out and try" methods are eliminated.

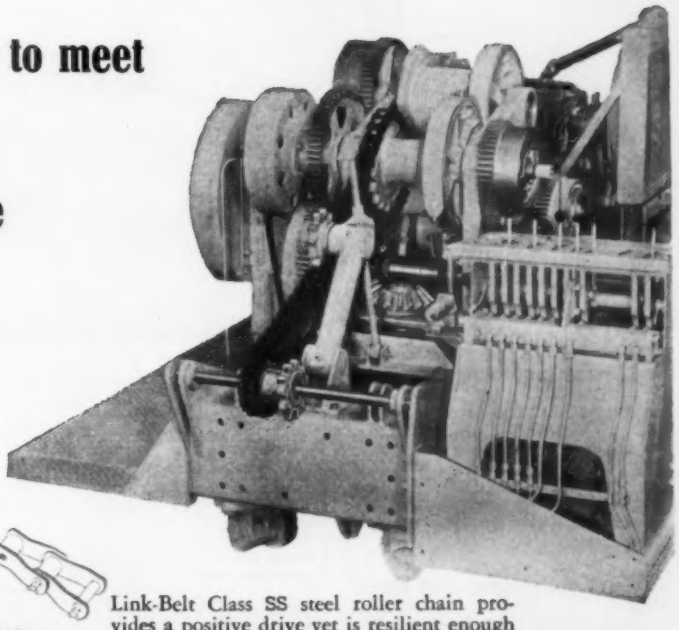
Flexible Sheet Mica Insulation Can Be Stored for Long Time

Sheet mica insulation that can be stored twice as long as ordinary bonded mica products and combines the advantages of extreme flexibility and low-binder content as replacement of several different grades, hitherto stocked for different applications, is announced by the Laminated & Insulating Products Dept.,

(*Please turn to page* 130)

to get the chain that best suits your drive or conveying job

Choose the size and type to meet your specific requirements from LINK-BELT's complete chain line



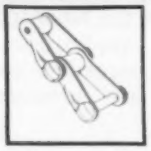
Link-Belt Class SS steel roller chain provides a positive drive yet is resilient enough to absorb impact. Here power is supplied to the boom countershaft of an outstanding shovel-crane.

LINK-BELT

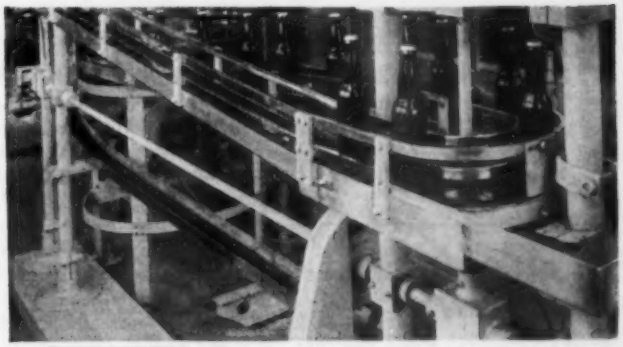
CHAINS AND SPROCKETS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices in Principal Cities. 13,322

Follow the lead of all industry—for your complete drive and conveying chain needs, rely on LINK-BELT



Original equipment on this mechanical lift trimmer includes 28 strands of Link-Belt Class H pintle chain: nine transfer chains at right and 19 feed chains with attachments at left.



Bottles ride smoothly on Link-Belt universal carrier chain. On this bottle elevator, flat-top chain travels around vertical curves and sharp horizontal bends.

"AMERICAN BRAND"

ROPE IN CARTONS!

- Carton protects rope
- Rope stays clean
- Uncoils from carton
- No inner lashings
- Uncoils properly—no kinking
- Easy to handle and stock

6 Sizes—10 Put-ups In Individual Cartons

1/4", 5/16", 3/8", 1/2" dia. in 600 and 1200 foot coils—5/8" and 3/4" dia. in 600 foot coils only.

Handy Coils
100 foot connected coils. 1/4" 5/16" 3/8" 1/2" diameter.

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Rope (Manila, Sisal, Jute, Nylon, Polyethelene, Saran, Glass), Twine, Oakum, Packing, Baler Twine, Carpet and Electrical Yarns

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Get complete information on "American Brand" Rope in Cartons.

AMERICAN MANUFACTURING COMPANY
Noble & West Sts., Brooklyn 22, N. Y.

Please send information about

☐ *Rope In Cartons* ☐ *Handy Coils*

Name_____

Company_____

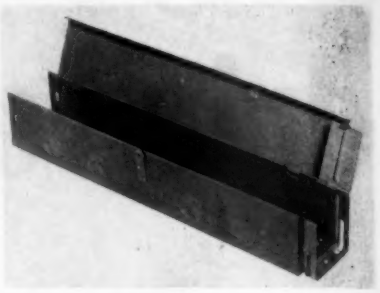
Address_____

City_____ Zone____ State_____

(*Continued from page* 126)

General Electric Co., Pittsfield, Mass. Developed for motors and generators operating up to 150C, the company believes that it is the first flexible sheet mica to impart flexibility with a binder content of only 7% to 11%. Minimum dielectric strength is 350 v per mil for sheets up to 20 mils and 300 v per mil for thicker material.

Wiring Trough Reduces Wireway Installation Time Up to 20%



A newly designed wiring trough greatly reduces wireway installation time. Called the "Lay-In" duct, since all lengths and connectors are hinged to provide an unobstructed wireway to "lay-in" conductors, it reduces installation time as much as 20% because threading or pulling conductors is eliminated. Additional installation time is further saved since the duct connector utilizes only two screws to join two duct lengths. It is manufactured in standardized sections in 2½" x 2½", 4" x 4", and 6" x 6" sizes. A complete line of fittings with removable covers is available with the same lay-in feature. For details, write SquareD Co., 6060 Rivard St., Detroit 11, Mich.

2 Urea-Formaldehyde Compounds For Use In Compression Molding

Two new urea-formaldehyde molding compounds have been developed by American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y. Beetle C-4980 standard compression molding compound is ideal for standard-molded electrical wiring devices and other applications requiring good electrical properties. In addition, its excellent physical properties make it well suited for products with hard, smooth, lustrous, wear-resistant surfaces. The other Beetle molding compound is a special grade for plunger and transfer techniques and is the answer to the many general applications not adaptable to compression molding methods. Both are produced in granular form.

"WHERE DO YOU BUY YOUR ALKALIES, BILL?"

"I Call SOLVAY *FIRST* for Alkalies because...

SOLVAY

Soda Ash
Caustic Potash
Chlorine
Potassium Carbonate
Calcium Chloride
Sodium Bicarbonate
Sodium Nitrite
Caustic Soda
Cleaning Compounds
Ammonium Bicarbonate
Para-dichlorobenzene
Ortho-dichlorobenzene
Monochlorobenzene
Ammonium Chloride
Snowflake® Crystals

. . . **I know** I can count on Solvay to give me the services I need to operate my business smoothly. Whether I'm placing a big order, or whether I want some technical help, I always get cooperation from the folks at Solvay.

A perfect example of this is Technical Service. Through the years, Solvay has accumulated a vast store of technical information that has been put into informative booklets called Solvay Technical Service Bulletins. These bulletins are available to me whenever I need 'em. And they cost me nothing—they're free. I can also get further technical help from the Solvay Technical Service staff—fellows who are experts in individual industries.

Doing business with Solvay is convenient for me, too . . . there are thirteen sales offices in key cities where you can get courteous friendly service. And you can get prompt delivery from Solvay's three centrally-located plants and more than 200 local stock points.

Why don't you call *Solvay first* for alkalies?"

SOLVAY PROCESS DIVISION

Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit
Houston • New Orleans • New York • Philadelphia • Pittsburgh
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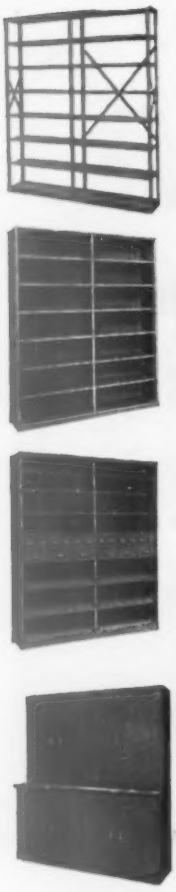


How to save money on steel shelving

DeLuxe shelving costs you less. DeLuxe precision shelving has *fewer parts*, uses *80% less bolts* and is the *only shelving* available that is *100% adjustable.* It's quicker, less costly to install—easier to adjust.

Wherever you are, a DeLuxe factory representative is available to give you a complete engineering, planning and layout service without obligation.

Write for a free catalog now, while your mind is on shelving.

DeLuxe

DeLuxe Metal Furniture Co.
309 Struthers St., Warren, Pa.

For over 25 Years Manufacturers of:
Storage Shelving • Library Shelving
Storage Cabinets • Shop Equipment

Disinfecting System Penetrates All Plant Areas Simultaneously

Insect infestations in industrial plants and other buildings can be controlled, according to West Disinfecting Co., Long Island City, N. Y., by means of an automatic, permanent atomizing system. This can be installed in existing buildings or incorporated in new building plans. The company's system works thusly: Compact atomizer units are attached by pipeline both to an insecticide reservoir located on the plant roof and to the plant's compressed air or steam system. The atomizer unit breaks the liquid insecticide into a fine mist that penetrates into every opening and crevice. Thus one man can spread a fine insect killing fog through all plant areas simultaneously.

Packaged System Converts Large Boilers to Oil or Gas Firing

For the first time, a completely factory-coordinated industrial fuel burning system makes available a packaged system for the conversion of large boilers to oil or gas firing. Developed by the Industrial Division of York-Shipley, Inc., York, Pa., the system includes proper controls mounted in panels and wired to terminal strips for easy connection, factory engineered windbox assembly and refractory ring to guarantee quick installation, fuel oil heaters and trim. According to the manufacturer, this makes it possible for the buyer of an industrial fuel burning system to purchase it completely factory engineered and built by one manufacturer, saving installation and operating costs.

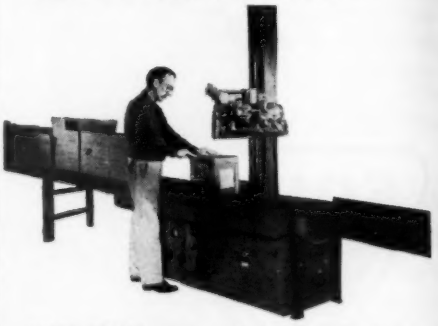
0.1 Sec. To 5 Min. Or More Time Delay Possible With New Switch

The "Agaswitch" has been developed for applications where a mechanically or manually initiated time delay is needed. It is operated by a lever rather than by solenoid action. Pressure against the lever trips the switch and a time delay period from 0.1 sec to 5 min or more starts upon release of pressure on lever. The time delay is obtained by restricting air flow through an adjustable orifice in the timing head. The switch is available in both single pole double break, and double pole single break types, for resistance loads of approximately 15 amp at 115 v, 60 cycles. Apply: Elastic Stop Nut Corp. of America, 1027 Newark Ave., Elizabeth 3, N. J.

how two companies cut packing costs

Read this if you ship in corrugated or fibre cartons! It tells how two well known manufacturers cut packing costs . . . by thousands of dollars *annually* . . . with International Carton-Stapling Machines. Here's the story:

$28,000 saved by Harrison Steel Cabinet Co., manufacturers of kitchen wall, base and sink cabinets. Harrison improved working conditions . . . doubled production.



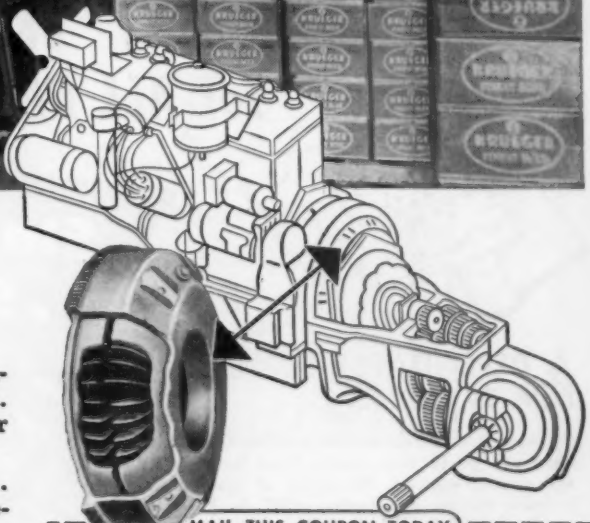
$20,000 saved by Uarco, Inc., manufacturers of business forms. Closing 2,500 cartons formerly took 48 man-hours . . . now it takes 12 man-hours.

40 models...from portable units to big multi-head automatic models. Write for details.

INTERNATIONAL STAPLING MACHINES
INTERNATIONAL STAPLE & MACHINE COMPANY
804 E. Herrin St., Herrin, Illinois

All power trucks lift, move and stack

BUT ONLY YALE GAS TRUCKS HAVE FLUID DRIVE



Smooth, trouble-free Fluid Drive gives you 3 to 8 times longer clutch life... saves costly, work-stopping clutch repair and too-frequent replacement.

Less down time is just one of the big advantages of Yale-exclusive Fluid Drive. You get continuous, stall-free operation . . . smoother stops and starts to protect your load as well as your operator.

Other Yale Gas Truck features . . . many of them exclusive . . . include rugged 65 HP Industrial Engine—safer, surer Automotive-type Brakes—Shockless Steering—Hypoid Gears.

Yes, YALE Trucks and attachments lead in money-saving efficiency . . . cut costs as much as 75% in industries everywhere. And, every Truck YALE makes . . . Gas, Electric, Diesel, LP-Gas or Gas-Electric . . . is subject to rigid Quality-Control checks at every stage of manufacture.

YALE*

MATERIALS HANDLING EQUIPMENT

*Registered in U. S. Patent Office

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Roosevelt Blvd. and Haldeman Ave., Phila. 15, Pa.

☐ Please send my free copy of *Picture Story of Yale Materials Handling Equipment.*

Company_____

Name_____ Title_____

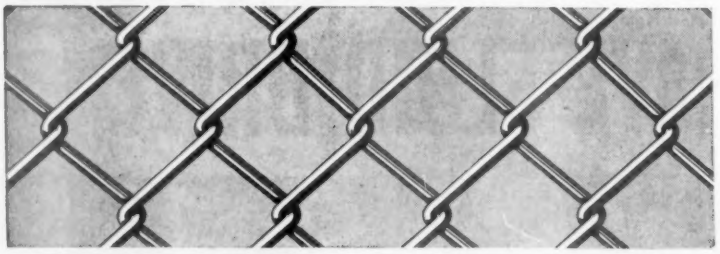
Street_____ City_____ State_____

In Canada write: The Yale & Towne Mfg. Co., St. Catharines, Ontario, Canada

Gas, Electric, Diesel Lift Trucks • Worksavers • Hand Trucks • Hand and Electric Hoists • Pul-Lifts

PAGE FENCE—Since 1883

• AMERICA'S FIRST WIRE FENCE •



EVERY STEP IS QUALITY CONTROLLED— FROM RAW METAL TO THE ERECTED FENCE

• Page *Chain Link* Fence, pioneered by PAGE and produced only by PAGE, offers reliable protection against hazards which threaten both property and persons.

YOUR CHOICE OF THREE SUPERIOR METALS is assurance that your fence will best meet your needs. Choose heavily-galvanized Copper Bearing Steel, or long-lasting Stainless Steel, or corrosion-resisting Aluminum. Interlocking wires are woven to form a strong, uniformly square mesh.

EIGHT BASIC STYLES, varied by choice of metals, wire gauges, heights, types of gates, posts and post tops, and top rails. Tension and fabric bands not removable from outside. Gate frames welded at joints.

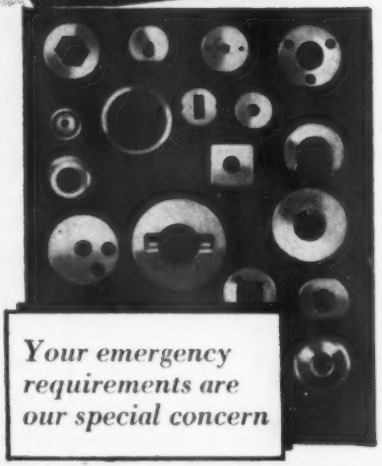
IT'S TIME TO THINK, AND ACT. Page Fence is expertly erected by technically trained firms conveniently located throughout the country. For illustrated PAGE data and name of nearest firm . . .

Write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, New York or San Francisco.

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

STEEL WASHERS for ALL REQUIREMENTS

Standard .. Specials



A DEPENDABLE SUPPLIER FOR 39 YEARS . . . .

Fit yourself for a halo and keep production rolling when you go to dependable Joliet for standard and special washers. Thousands of special dies in many shapes and forms, 9/32" to 8" O.D., gauges No. 28 to 3/8". A variety of finishes available to meet your special needs, including: Electro-plating, Galvanizing, Parkerizing and Cyanide hardening.

AFTER ALL! THERE'S NO SUBSTITUTE FOR QUALITY AND SERVICE

Your emergency requirements are our special concern

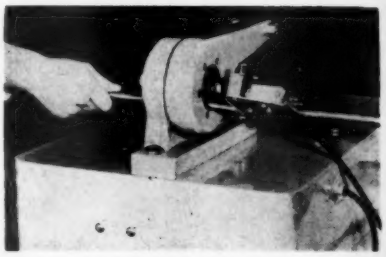
JOLIET WROUGHT WASHER CO.

203 CONNELL AVE.
JOLIET, ILLINOIS

Low-Temperature Grease

A highly versatile grease, which permits the efficient operation of aircraft accessories in ambient temperatures ranging from minus 100F to plus 250F, has been developed by the Texas Co., 135 East 42nd St., New York, N.Y. The new grease is used to lubricate anti-friction bearings, gears, rolling and sliding equipment having very low motivating power, some types of electronic equipment, instruments, and small actuators in conditions where starts at temperatures as low as minus 100F may be required. For short periods, the grease functions effectively beyond the high temperature of 250F for which it was normally designed.

Gage Speeds Up Bar Stock Cutting Operations



A new gage, called the "Micro-matic Gage", makes it possible to maintain in excess of 9000 cuts an hour in bar stock with the Di-Acro power rod parter. The operator sets the gage for the desired length of cut, inserts the material in the proper hole in the cutting heads, and pushes it through the heads flush against the gage. The contact relays to a solenoid which trips off the cutting action and allows the cut part to be ejected. The operator can concentrate on feeding stock without foot or hand controls. O'Neil-Irwin Mfg. Co., 601 Eighth Ave., Lake City, Minn. are the manufacturers.

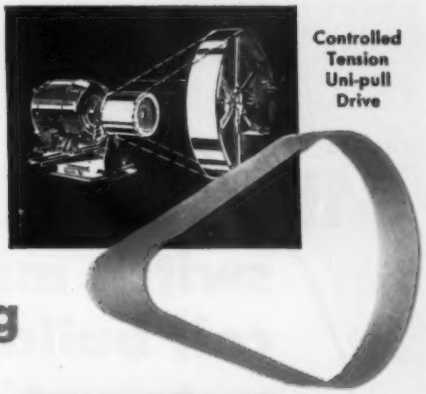
Two-Piece V-Pulley Easily Assembled And Removed

A V-pulley with a flanged type split taper bushing that permits the hub to grip the shaft and still allows easy assembly and removal is announced by Worthington Corp., Harrison, N. J., for its line of quick detachable fractional hp pulleys for mechanical power transmission. The pulley is a simple two-piece assembly, drawn together by three slotted hex-head machine screws. Two additional tapped holes allow removal

(*Please turn to page* 140)

Whatever your drive . . .

You'll transmit maximum power *longer* with G&K Flat Leather Belting



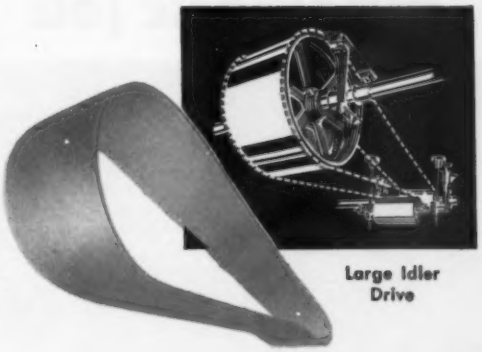
Controlled Tension Uni-pull Drive

Your own tests will prove that Graton & Knight flat leather belts deliver more horsepower over longer periods of time than ordinary transmission belting.

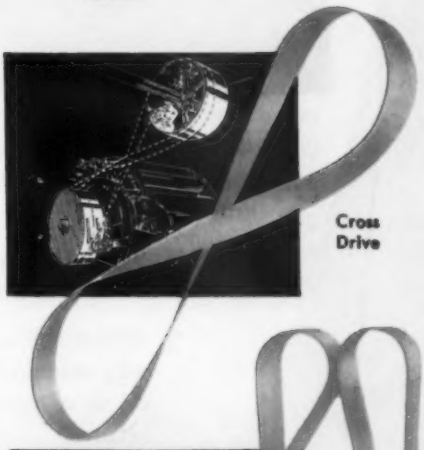
That's because three qualities are developed in every G&K belt through the expert selection, currying and tannage of top grade leather.

First there's tight pulley wrap for maximum horsepower and sustained rpm. Next, there's fluid drive action to absorb starting torque and load shock. And finally, you get a natural "three-dimensional" fiber leather belt which is built to last for many years of profitable service.

There's a G&K flat leather belt engineered for your specific drive and operating conditions. The three most popular brands (shown below) are all tension-cemented by a patented process, waterproof-treated and mildew-proofed.



Large Idler Drive



Cross Drive

HEART OAK

Top grade center stock oak tannage for lateral firmness and real pulling power. Famous general purpose belting . . . ideal for heavy duty, stepcone and shifter drives.

PREMIUM RESEARCH QUALITY

Premium quality belt of choicest center stock leather tanned and curried by exclusive G&K process. Highest coefficient of friction, great flexibility and resilience with minimum permanent stretch. Ideal for short center, serpentine and other *precision* drives.

BELTING MANUAL FREE

Charts and formulas for the engineer — specification details for the buyer — application and operating data for the maintenance man. A copy is yours for the asking.

SPARTAN

Special combination tannage engineered for drives that must operate under severe atmospheric conditions. Very high friction surface with great flexibility and little shrinkage or expansion under varying degrees of humidity. Resists heat, steam, oil, acid and alkali fumes.

Serpentine Drive

GRAKO® Sprazon

THE ORIGINAL BELT DRESSING IN A SPRAY CONTAINER

Spray away belt slip and increase belt life with SPRAZON. It's safe. It's easy. It's economical. Use on leather, rubber, fabric — flat, round and V belts. Also available in cans and drums. See your distributor or write for folder.

Straight Open Drive

Graton & Knight Company

GRATON AND KNIGHT®

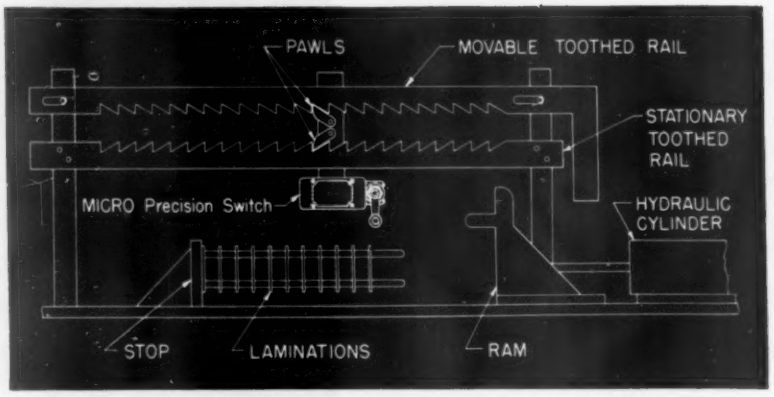
Estab 1851

Worcester 4, Massachusetts

World's Largest Manufacturer of Industrial Leather Products including flat, round, link and V belting; belt lacings, dressings and cements. Textile leathers. Packings — leather and rubber.

B-5

MICRO heavy duty limit switch makes accurate coil building an automatic job



• Spacing of laminations is done automatically on this coil building machine by use of a MICRO heavy duty limit switch.

1 The ram pushes laminations on tubes until contact is made with the limit switch.

2 When the switch is operated it trips a four-way solenoid valve which reverses the flow of oil in a hydraulic valve, forcing the ram to return.

3 When the ram reaches the end of its return travel, an arm on the ram causes the switch assembly to move back one notch . . . ready for the next operation.

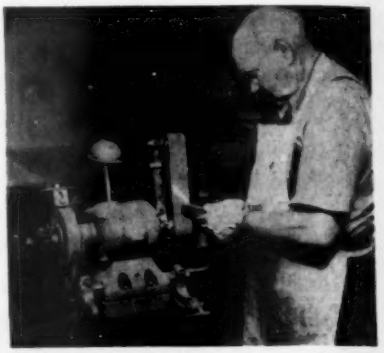
This is another of the thousands of uses plant engineers and maintenance men are making of MICRO switches as limits, safeties and interlocks on every type of plant equipment. It is easy to make machinery safer and more productive through the use of MICRO switches. There is an authorized MICRO distributor near you with a wide variety of switches to meet your specific needs. Look in your classified telephone directory under "Switches, Electric."

MICRO A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
MAKERS OF PRECISION SWITCHES
FREEPORT, ILLINOIS

(*Continued from page* 136)

of the pulley from the hub by using the assembly screws as jack screws to break the cone grip. Assembly or removal may be performed with a screw driver or a wrench. The design utilizes one common hub for the range of pulleys from 3.5″ P.D. to 15.4″ P.D.

Attachment Has Wide Use in Grinding and Polishing

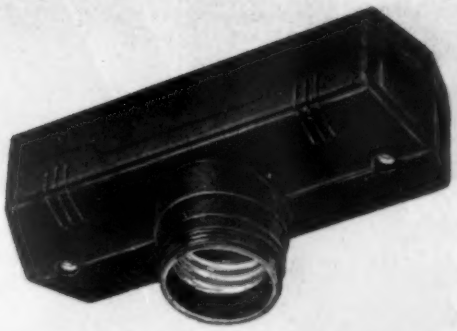


Curtis Machine Corp., Jamestown, N. Y., states that its Adapt-A-Belt is one of the most universal attachments ever built for use on a wide variety of grinding and polishing operations. It is made for use as a portable grinder attached to an air outlet or to clamp on lathes, milling machines, drill presses or pedestal grinders to do work quickly on jobs that do not warrant setting up a machine. Advantages of the machine include the use of dynamically balanced rubber covered contact wheels in various diameters, widths and durometer, as well as soft or hard cloth wheels. Model A-1 uses abrasive belts up to 1″ wide and weighs 2¼ lb; model A-2 takes 2″ belts and weighs 2½ lb.

Mild Steel Electrode

An improved electrode, the Airco 78E, is announced for welding mild steel in all positions. It offers deep penetration without undercutting, with a minimum of spatter and uniform weld deposits without finger-nailing. The deposit solidifies quickly, especially adapting this electrode to welding in the vertical and overhead positions. The electrode is recommended for the fabrication of mild steel involving plate and rolled sections or castings, fired and unfired pressure vessels, pipe lines and all classes of marine work where high ductibility and tensile strength are essential. Made by Air Reduction, 60 East 42nd St., New York 17, N. Y.

All Monowatt SURF-A-LINE devices are listed by Underwriters Laboratories and meet REA and Federal Specifications.



For Safety, Service and Savings
Monowatt uses BEETLE® C-4980 Molding Material
the low cost brown BEETLE with superior arc resistance

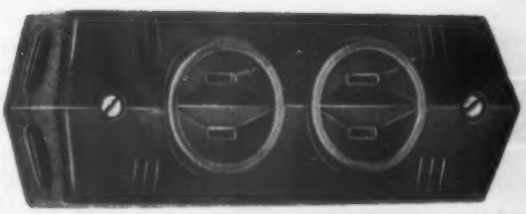
Brown BEETLE C-4980 is used in Monowatt surface wiring units such as outlets, lampholders, switches and junction boxes. In such equipment BEETLE shows superior arc resistance (greater than 100 seconds ASTM), correspondingly high track and flame resistance, good dielectric strength, chemical resistance, dimensional stability, speedy molding cycles, and low price. Due to its unique combination of properties, BEETLE makes possible units that are simpler in design, lighter in weight and more durable under severe working conditions.

Monowatt units with BEETLE housings have been in use for over two years *without a single reported failure due to arcing.*

REMEMBER . . . BEETLE C-4980 is only one of a large family of American Cyanamid plastics. Our skilled application engineers will be glad to help you determine the right BEETLE, LAMINAC or MELMAC for your requirements.

BEETLE® urea-formaldehyde molding materials . . .
LAMINAC® polyester resins . . .
MELMAC® melamine-formaldehyde molding materials . . .

made under rigid controls to
American Cyanamid's high standards of quality



AMERICAN Cyanamid COMPANY
PLASTICS DEPARTMENT
33C Rockefeller Plaza, New York 20, N. Y.
In Canada: North American Cyanamid Limited,
Royal Bank Building, Toronto, Ontario, Canada

the A-B-C of M-S-T

A LWAYS MAKES POSSIBLE
B ETTER PRODUCTS AT LOWER
C OST

Michigan
Electric Resistance
WELDED
STEEL
TUBING

A Quality Product

ROUND
⅜" to 4" O. D. 9 to 22 gauge
SQUARE-RECTANGULAR
½" to 2" 20 gauge, 1" to 2¾",
14, 16, 18 gauge
Carbon 1010 to 1025

Michigan Tubing
has uniform strength, weight, ductility, I. D. and O. D., wall thickness, machinability, and weldability. It can be flanged, expanded, tapered, swaged, beaded, upset, flattened, forged, spun closed, fluted, and rolled. Available in a wide range of sizes, shapes and wall thicknesses, prefabricated by Michigan or formed and machined in your own plant.

Washing Machine Center Tube Shaft

The meticulous workmanship that goes into every piece of Michigan tubing is well illustrated by the center tube shaft manufactured by Michigan for a washing machine.

In the production of this part, absolutely accurate finishing to the closest tolerances is required. For example: at the head—I. D. plus or minus .001, O. D. plus or minus .003. Tube O. D. is 2.50 inches, with .120 gauge thickness. Michigan's know-how and modern precision and production equipment makes it a simple matter to conform to close tolerances and ship parts ready for assembly by the customer.

We invite manufacturers to consider the advantages in cost savings and product improvement by the use of Michigan tubing.

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Plus Fabricating of our own tubing Michigan is interested ONLY IN THE FABRICATION OF Stainless steel, copper, brass and aluminum tubing.

ELECTRIC RESISTANCE WELDED STEEL TUBING
Michigan STEEL TUBE PRODUCTS CO.
THE OLDEST NAME IN

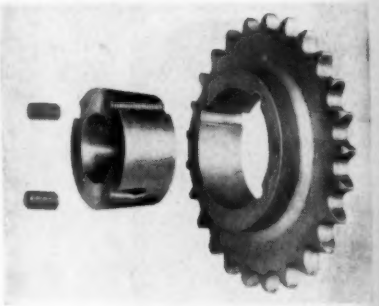
More than 35 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN—SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—C. L. Hyland Co., Dayton, Ohio—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—Strong, Carlisle and Hammond Co., Cleveland, Ohio—Globe Supply Co., Denver, Colorado—W. A. McMichaels Co., Upper Darby, Pa.—A. J. Fitzgibbons Co., Buffalo, N. Y.—Harry E. Clark & Co., Houston, Texas—J. B. Beaird Co., Inc., Shreveport, La.—C. I. Crais Co., Birmingham, Alabama.

Low Cost, Positive Sealed Bearing For Industrial Wheels

Sealed bearing developed for casters and wheels positively seals grease in and dirt out. Its simple design assures economical first cost, plus long service life. This labyrinth-type seal eliminates the necessity for specially prepared surfaces to insure proper sealing. It is a free-running bearing with a minimum of friction or drag and can be re-greased by standard grease gun technique through regular Alemite pressure fittings. The seal is easily and inexpensively replaced without taking apart. Tests show that the seal prevents entrance of dust, water sprays or steam cleaning fog. It is made by Bassick Co., Bridgeport 2, Conn.

Roller Chain Sprocket Wheels Have Taper Lock Bushings



A new line of roller chain sprocket wheels with taper lock bushings can be securely mounted on a shaft without reboring to furnish a shrink fit. Action of the taper lock bushing assures tight fit within the full range of normal shafting tolerances. Set screws force and hold the split tapered bushing in the tapered bore of the sprocket wheel causing it to lock tightly to the shaft. The sprocket wheels with tapered lock bushings are available for ½, ⅝, ¾, 1 and 1¼ pitch single width chains. Manufacturer is Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Reliability, Long Life Features Of Resistance Welding Control

Fast high quality resistance welding of hard-to-weld metals will be facilitated by use of its synchronous-precision control says the Industry Control Dept., of the General Electric Co., Schenectady 5, N. Y. The control accurately regulates the value of the current and length of time it flows, to help assure high quality welding, especially where

(*Please turn to page* 146)

Here's Up-To-Date Information on Permanent, Waterproof Bonding with PENACOLITE® RESORCINOL ADHESIVES

• Koppers has prepared an interesting new booklet which describes and illustrates in detail the diversified applications of the five "Penacolite" Adhesives.

Each of these adhesives excels in bonding applications which include prefabricated housing, television cabinets, water craft (from minesweepers to pleasure craft), barn rafters, aircraft, cross-arms for the support of high-tension lines, etc.

It will pay you to investigate popular, waterproof "Penacolite" Adhesives. Fill out the coupon and send for your booklet now. No obligation, of course.

Koppers Company, Inc., Dept. P-93
Pittsburgh 19, Pennsylvania

Please send me your "Penacolite" Booklet.

Name .....

Company .....

City ..... State .....

KOPPERS COMPANY, INC., Chemical Division
Koppers Building, Pittsburgh 19, Pennsylvania

KOPPERS®

PENACOLITE® RESORCINOL ADHESIVES

The original resorcinol, waterproof, room-temperature-setting adhesives

HARRISBURG CYLINDERS

FOR HIGH-PRESSURE GASES

NEED CYLINDERS?

CYLINDER PROBLEM?

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HARRISBURG STEEL!

It's only natural . . . the biggest producer builds them best. In a complete range of sizes and capacities from 14 to 400 cubic feet . . . in both Domestic and Export types . . . to I.C.C. Specifications . . . for storage and transportation of fixed, liquid, and medical gases. *If you need cylinders or have a technical problem concerning cylinders . . . consult us.* Or write for a Catalog and prices . . . today.

1833 • 1933 HARRISBURG STEEL Centennial Year 100 YEARS OF SERVICE TO COUNTRY AND INDUSTRY

100 Years in Pennsylvania's Capital

Harrisburg Steel CORPORATION HARRISBURG PENNSYLVANIA

LIFTS DIRT FROM FLOORS... HOLDS IT OFF...

CINDET

100% ACTIVE — 100% SAFE!

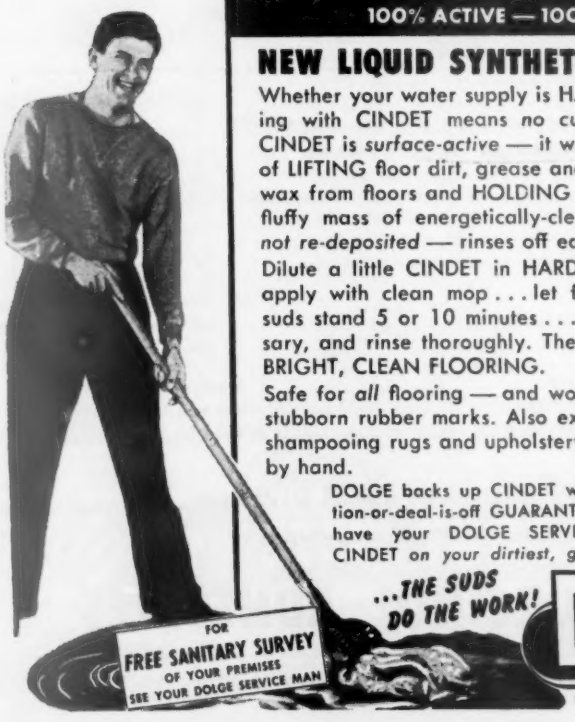
NEW LIQUID SYNTHETIC DETERGENT

Whether your water supply is HARD or SOFT, cleaning with CINDET means *no curds, no dingy film!* CINDET is *surface-active* — it works on the principle of LIFTING floor dirt, grease and old water-emulsion wax from floors and HOLDING it in suspension in a fluffy mass of energetically-cleaning SUDS. *Dirt is not re-deposited* — rinses off easily.

Dilute a little CINDET in HARD or SOFT water . . . apply with clean mop . . . let foamy, clean-looking suds stand 5 or 10 minutes . . . scrub only if necessary, and rinse thoroughly. The result: AMAZINGLY BRIGHT, CLEAN FLOORING.

Safe for *all* flooring — and wonderful for removing stubborn rubber marks. Also excellent for walls, for shampooing rugs and upholstery, for washing dishes by hand.

DOLGE backs up CINDET with a complete-satisfaction-or-deal-is-off GUARANTEE! Write for literature; have your DOLGE SERVICE MAN demonstrate CINDET *on your dirtiest, greasiest flooring.*



...THE SUDS DO THE WORK!

Dependable DOLGE

WESTPORT, CONNECTICUT

(*Continued from page* 142)

short durations of weld currents are necessary for high speed applications. The control was developed for: (1) welding stainless steel, aluminum or other alloys with a short plastic range; (2) where good welding with few rejects is important for peak production, as in chain welding; (3) where varying weld quality is not acceptable.

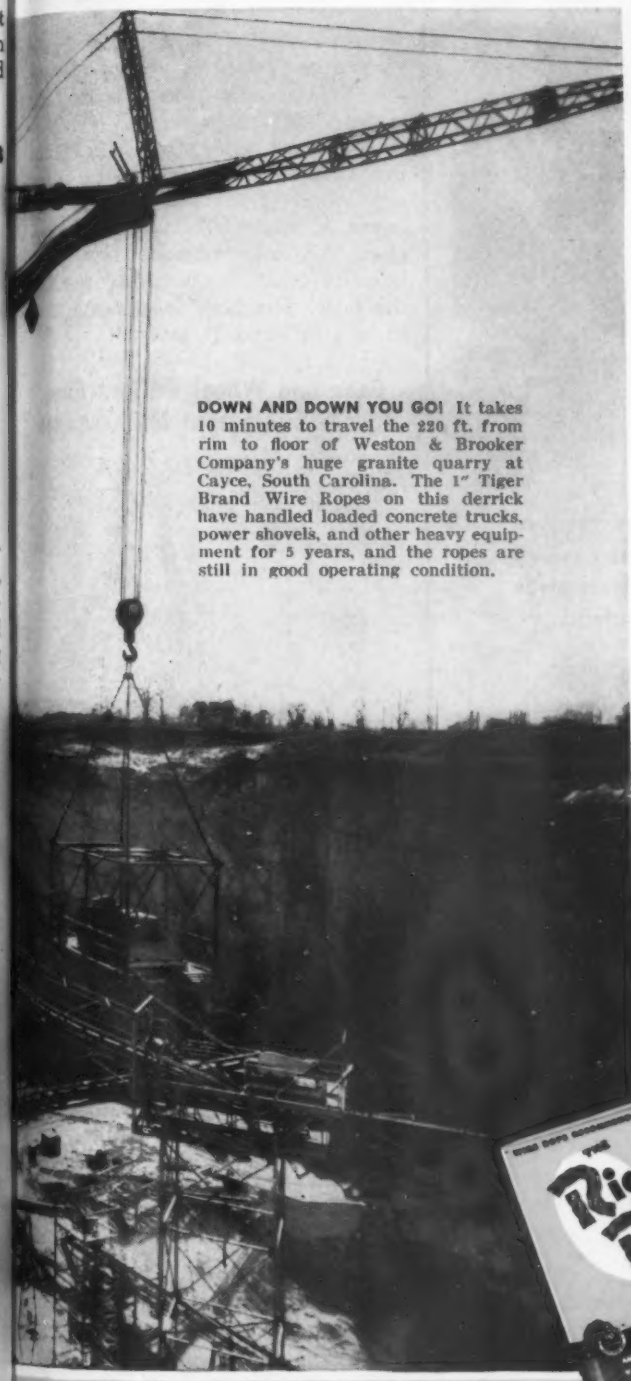
Magnetic Base Indicator Holders End Haphazard Clamping

Its magnetic base indicator holders are said by Lufkin Rule Co., Saginaw, Mich., to eliminate cumbersome, haphazard clamping and to speed up the job while ensuring greater accuracy. When the indicator holder is placed against any round or flat iron or steel surface, a powerful permanent magnet attaches instantly. With attachments, nearly all dial indicators can be held. The holders are, therefore, ideal for use on lathes, shapers, mills and planes. Swivel action post can be quickly and firmly secured in position with knurled locknut. Sensitive friction joint gives accurate adjustments. There are three models, two with 50 lb pull and the other with 100 lb pull.

Two-Way Communication System Speeds Industrial Operations

A two-way communication system for industrial use linking "base stations" with mobile units such as cranes, ore bridges, yard locomotives and boat unloaders is a development of Mine Safety Appliance Co., Braddock, Thomas and Meade St., Pittsburgh 8, Pa. It helps to coordinate operations, speed production, promote safety and reduce delays in materials handling. Clear, direct voice communication, audible above the noise level of plant operations is achieved with this heavy-duty FM "Telecrane" system. No new or additional electrical circuits for transmitting carrier waves. A coupling capacitor joins the carrier frequency to any a-c or d-c line.

Tiger Brand Wire Ropes have been used 29 years!



DOWN AND DOWN YOU GO! It takes 10 minutes to travel the 220 ft. from rim to floor of Weston & Brooker Company's huge granite quarry at Cayce, South Carolina. The 1" Tiger Brand Wire Ropes on this derrick have handled loaded concrete trucks, power shovels, and other heavy equipment for 5 years, and the ropes are still in good operating condition.

PLUNGING 220 ft. down through solid granite, this big open quarry is one of the deepest in the country. But no roads wind down to the floor, so The Weston & Brooker Company must transport all men and equipment with cableways and derricks.

This old, experienced company prefers American Tiger Brand Wire Ropes for this equipment over any other brand. Tiger Brand Ropes meet the tough operating requirements and give remarkable service.

On a cableway, which was installed in 1924, Tiger Brand Ropes have given long and phenomenal service.

On a big 70-ton stiff-leg derrick, which lifts shovels, trucks and other equipment weighing up to 80 tons, Tiger Brand Ropes are still in use after five years of hard service.

On a revolving storage crane, which operates right in the thick of hard, abrasive granite dust, Tiger Brand Wire Ropes again have given exceptional service.

Tiger Brand Wire Ropes will give *you* exceptionally long, low-cost service too. Send the coupon for a run-down on the hundreds of sizes and types available and typical jobs that each rope can do.

HELPFUL GUIDE BOOK

American Steel & Wire
842 Rockefeller Building
Cleveland 13, Ohio

Please send me, without obligation, a copy of your booklet, "The Right Rope for the Job," which lists the correct Tiger Brand Rope to use for hundreds of typical applications.

Name_____

Company_____

Address_____

City & State_____

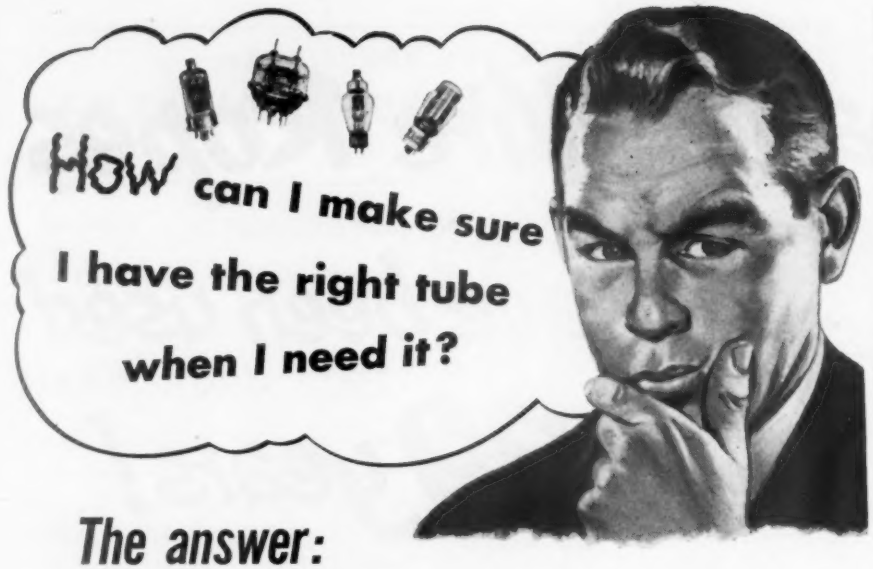
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL



The answer:

RCA's new Tube Requirement Analysis!

Now you can stop worrying about the possibility of a costly production shut down—in the event you have neglected to reorder a key tube type. Now you can also save money by avoiding "overstocks." RCA's new Tube Requirement Analysis gives you smooth control over your industrial tube requirements.

Get in touch with your RCA Tube Distributor

Give him all the information you can about your electronic equipment, the tube types involved, and your special requirements. In this way, you bring him up to date on the services in which your tubes are operated.

He analyzes your needs

Then your RCA Tube Distributor can prepare a record of movement on each tube type required for your equipment—can study *your* specific tube requirements.

He recommends a plan for YOU

Now, your RCA Tube Distributor presents a tube inventory plan—simplified and "tailored" specifically to your operations. He keeps up to date on your inventory . . . and backs it up with inventory service on his end, too! No overstocking. No shortages. Yet you can be sure you have the right tube—when you need it!

RCA's new Tube Requirement Analysis is available exclusively through your local RCA Tube Distributor. Call or write him, today. There is no charge or obligation for this service.

RCA® ELECTRON TUBES

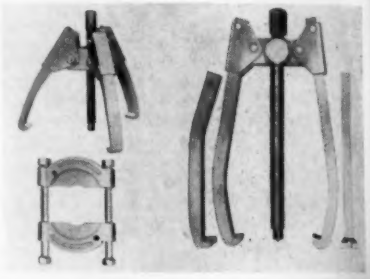
RADIO CORPORATION of AMERICA

HARRISON, N. J.

New Hose For Rugged Industrial Applications

The B. F. Goodrich Co., Akron, Ohio, says its new heavy duty air hose, known as the Commander, is suitable for working pressures up to 400 psi. The hose is reinforced with a single braid of high tensile steel wire and is said to be more flexible than other types of heavy duty air hose. The hose was designed for rugged service in mines, construction projects and general industrial use where high working pressures are required or where the hose cover is subjected to severe abrasion. An oil resistant hose tube permits tools to be oiled through the hose. The hose is manufactured in ½", ¾" and 1" sizes.

Gear and Wheel Pullers Ease Truck, Equipment Maintenance



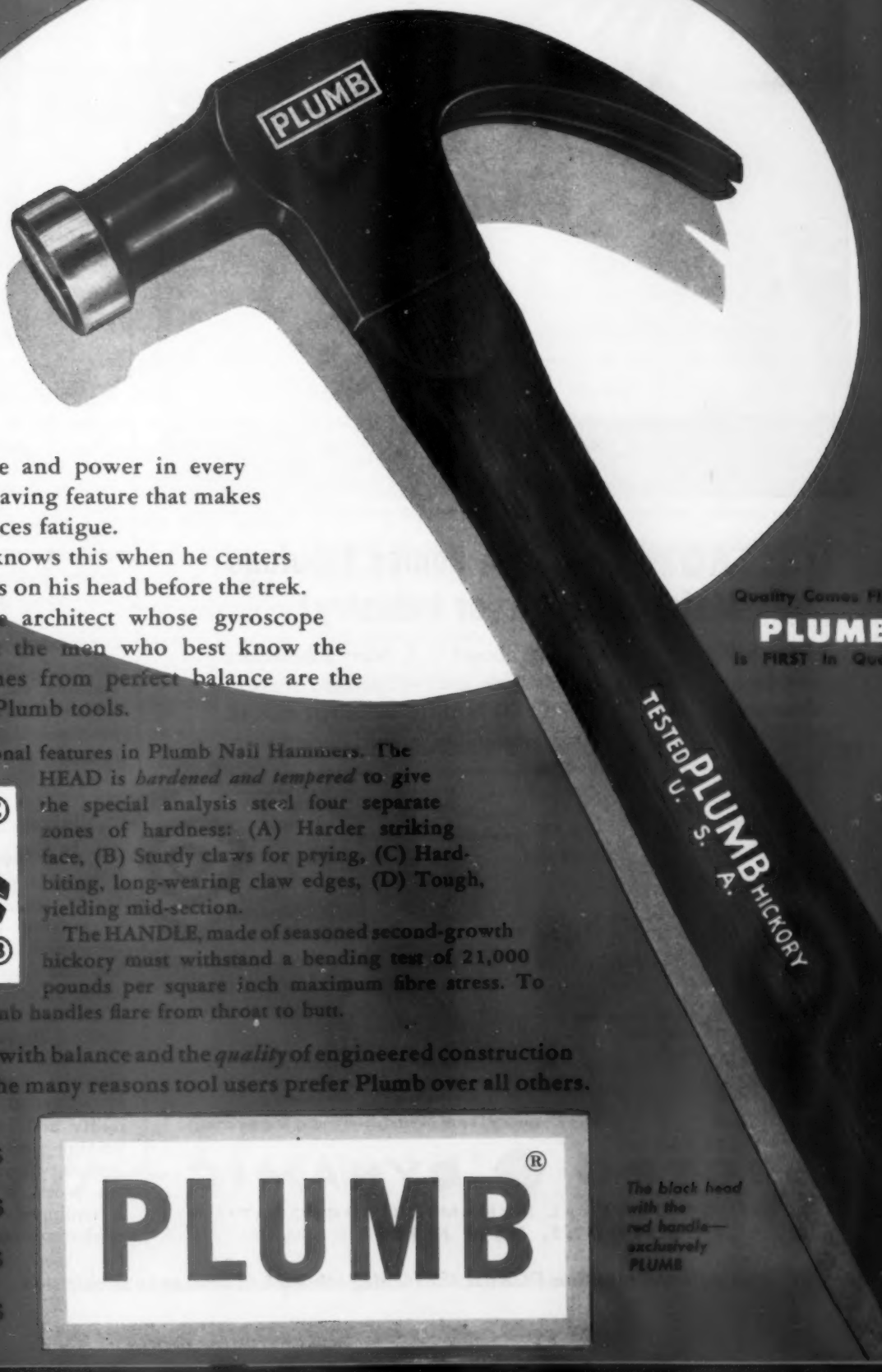
Truck and industrial equipment maintenance is facilitated by the introduction of a complete line of gear and wheel pullers. Jaws and blocks are forged from selected steel and heat-treated for extra strength and safety and jaw clips are self-adjusting. Forcing screws are made of high quality, heat-treated, alloy steel with newly developed "unified" thread on screws and blocks. Two and three-jaw styles in many sizes are available with changeable jaws to extend range of use and capacity. Write J. H. Williams & Co., 400 Vulcan St., Buffalo 7, N. Y., for Catalog No. A 525 for full details.

Motor Driven Trolley For Tramrail Service

Motor-driven trolleys, designed to operate with any common industrial voltage, are available for tramrail service. They can be furnished with any of 18 travel speeds by changing two or four gears. The units may be constructed to short wheel base at 25" in 4-wheel design and 16" - 16" - 16" in 8-wheel design. Longer wheel bases are available. The electric-powered trolley is designed for use with the

(*Please turn to page* 154)

Balance



Balance—extra force and power in every blow—is the work-saving feature that makes hard jobs easy, reduces fatigue.

The safari guide knows this when he centers his weightly supplies on his head before the trek. So does the marine architect whose gyroscope steadies a ship. But the men who best know the easy speed that comes from perfect balance are the craftsmen who use Plumb tools.

Look for these additional features in Plumb Nail Hammers. The HEAD is *hardened and tempered* to give the special analysis steel four separate zones of hardness: (A) Harder striking face, (B) Sturdy claws for prying, (C) Hard-biting, long-wearing claw edges, (D) Tough, yielding mid-section.

The HANDLE, made of seasoned second-growth hickory must withstand a bending test of 21,000 pounds per square inch maximum fibre stress. To prevent slipping, Plumb handles flare from throat to butt.

The *ease* that comes with balance and the *quality* of engineered construction—these are two of the many reasons tool users prefer Plumb over all others.

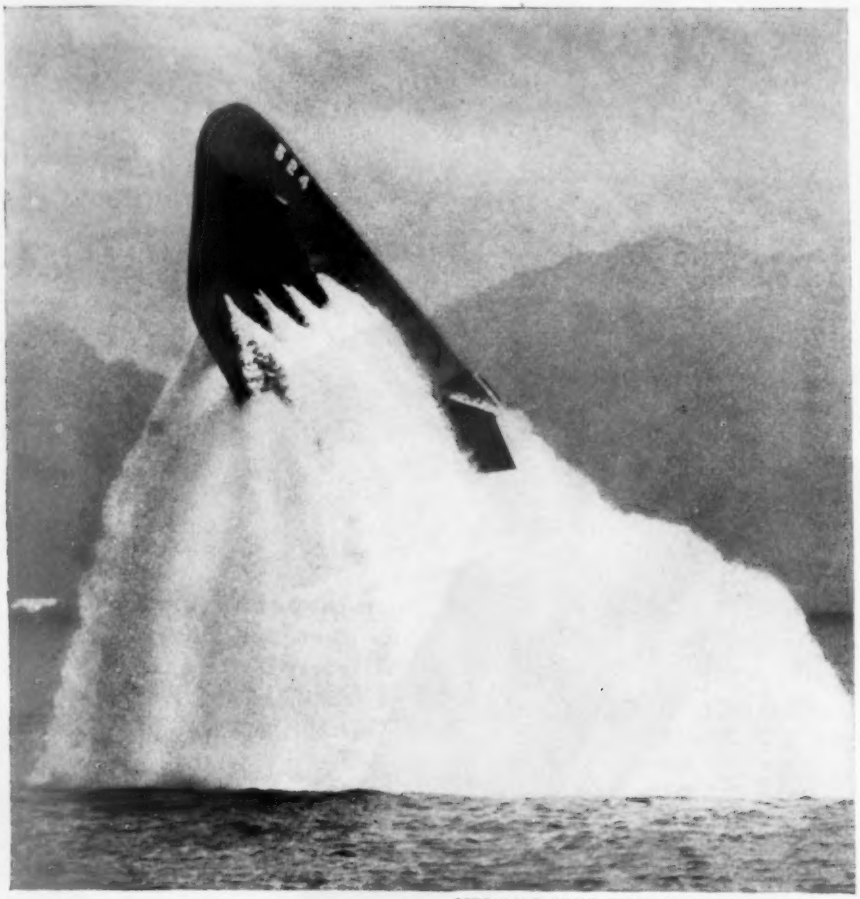
Quality Comes FIRST
PLUMB
Is FIRST in Quality

HAMMERS
HATCHETS
AXES
FILES

PLUMB®

The black head with the red handle—exclusively PLUMB

ELECTRO DYNAMIC
xtra *ependable*



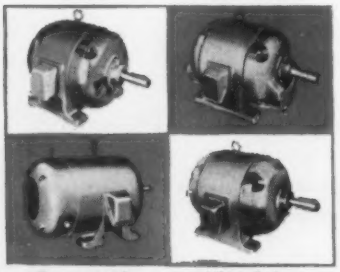
OFFICIAL U. S. NAVY PHOTO TAKEN OFF OAHU, HAWAII

UP FROM THE SEA comes fabulous Motor Stamina for Industry!

Over half a century of service aboard U.S. Navy submarines — *where dependability means life itself* — has bred tremendous stamina into ELECTRO DYNAMIC industrial motors. This inheritance of *extra dependability,* proved during years of gruelling duty under the sea, explains the amazing performance records being established by E.D. motors in industry today.

From 1 to 250 h.p.
(N. E. M. A. STANDARDS)

WRITE TODAY FOR CATALOGUE NO. 963



One-piece cast iron frames. Extra large "free-flo" air channels. Permanently aligned cast iron brackets. Liberal size grease lubricated bearings.

Also a complete line of Direct Current motors and generators

ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS CORPORATION
BAYONNE, NEW JERSEY

(*Continued from page* 150)

Ohio tramrail shielded safety type electrification, which carries the current conductor bars in a metal-housing directly under the track. The trolleys may be obtained to operate at 56, 75, 100, 150, 200, 250, 300, 450 and 600 fpm, or intermediate speeds. Made by Forker Corp., 2054 Random Rd., Cleveland 6, Ohio.

Storage Bins for Packages

Bins in green baked-on enamel finish are being manufactured by Lyon Metal Products, Inc., Aurora, Ill., for widespread application in the storage and display of parts or packaged items. All shelves adjust vertically, making space available for items of all sizes. Several models of bins are available offering different divider arrangements to provide various sized openings. Some bins also come with shelf boxes, especially designed for small quantities of small parts, nuts, bolts, washers, etc. The bins 3 ft wide by 1 ft deep and 6½ ft high are shipped set up and ready for use. Typical uses are in repair shops, tool rooms, machine shops, etc.

Universal Tilt Belt Grinder Is Rugged And Accurate

The Sierra Machinery Co., Inc., 141 W. Hazel St., Inglewood, Calif., is making a universal tilt belt grinder to do rugged roughing and accurate finishing on varying bevel parts. It will also do face finishing of parts with angles up to and including 30 degrees open or closed. The design of the machine has emphasized sturdiness, accuracy, ease of operation, maintenance accessibility and long life of moving or bearing parts. Controls allow the operator to maintain a firm hold on the work material. The machine is equipped with an exhaust and catcher system to carry off particles.

COATED ABRASIVES need from a specialist!

YOU CAN CUT COSTS . . .

and production time by the right choice of Coated Abrasives.

Be sure to get the right facts about coated abrasive applications from the man who specializes in knowing *all* about *all* coated abrasives — the BEHR-MANNING Field Engineer.

He is your best bet to insure against handicapping your output with methods that were good yesterday but are outmoded today — because BEHR-MANNING leads in coated abrasive research . . . because BEHR-MANNING offers the widest range of coated abrasive products, totaling over 30,000 . . . because BEHR-MANNING places at your disposal a fund of coated abrasive knowledge and practical experience that is unmatched. And because your BEHR-MANNING Field Engineer is in every sense of the word a specialist who makes a full-time job of bringing to your operations the latest work in coated abrasive "know-how."

The service of your local BEHR-MANNING Field Engineer is yours entirely without obligation. The same is true of the nearest fully equipped BEHR-MANNING Coated Abrasives Methods and Equipment Demonstration Room where other specialists are ready to help you determine by actual trial the right coated abrasives to use on your parts and the best method of applying them. Use these services and be sure of the latest word in coated abrasive products and procedures.

Get this "case study" packet

"Blueprints for Faster, Better Production", containing a group of typical cases where coated abrasives, correctly applied, have stepped up production. Write today to Behr-Manning Corp., Troy, N. Y., Dept. PU-9.

For Export: Norton Behr-Manning Overseas Inc., New Rochelle, N. Y., U. S. A.

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▲COATED ABRASIVES
▲SHARPENING STONES
▲PRESSURE-SENSITIVE TAPES

METAL EDGE
pays packaging dividends in 3 typical industries

CUTS SHOCK DAMAGE TO INSTRUMENTS!

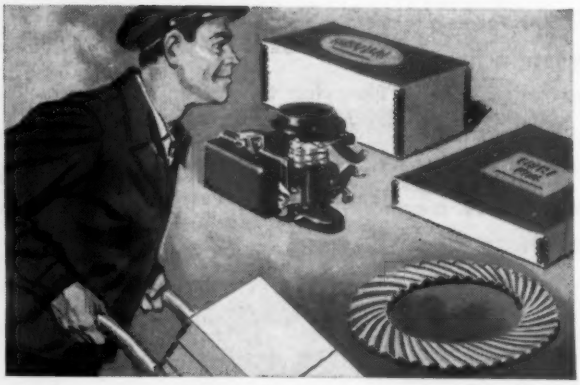
"Wooden boxes often broke, but M.E. boxes have the 'give' to absorb bumps, and strength to protect our regulators. Best of all they save us 50% on packaging and labor costs."

INCREASES DISTRIBUTION!

"Many dealers refused to carry all our pulley sizes because of difficulty in stocking unpackaged items. Now we use M.E. boxes, and dealers have substantially increased their inventories."

PROTECTS HEAVY-WEIGHT PRODUCTS!

"Sturdy M.E. boxes enable us to ship spare and replacement parts the safe way... eliminate box breakage complaints ...dealers like 'fresh-box' appearance."



METAL EDGE—the engineered method—has solved diverse packaging problems in over 100 American industries.

NATIONAL METAL EDGE BOX CO.

PACKAGING • MATERIALS HANDLING • INVENTORY CONTROL

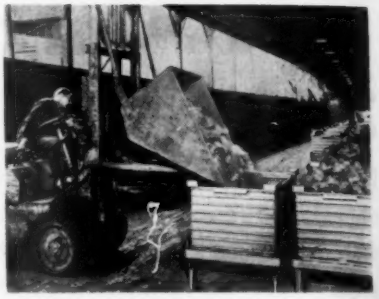
1214 Callowhill Street, Philadelphia 23, Pa.

METAL EDGE

Lightweight Fire Extinguisher Fights Classes B and C Fires

Class B and Class C fires can be more effectively fought, according to American - LaFrance - Foamite Corp., Elmira, N. Y., with their new Alfco Model PCB-1 fire extinguisher. It is a stored pressure unit charged with bromochloromethane, more commonly known as "CB" liquid. It is a faster acting vaporizing liquid that has proved remarkably effective on flammable liquid or electrical type fires. The new fire extinguisher is a lightweight unit designed for one-hand operation and can be aimed like a gun. The trigger can be worked easily even when heavy work gloves are worn.

Lift Truck Can Be Converted to "Front End Loader" in 30 Secs.



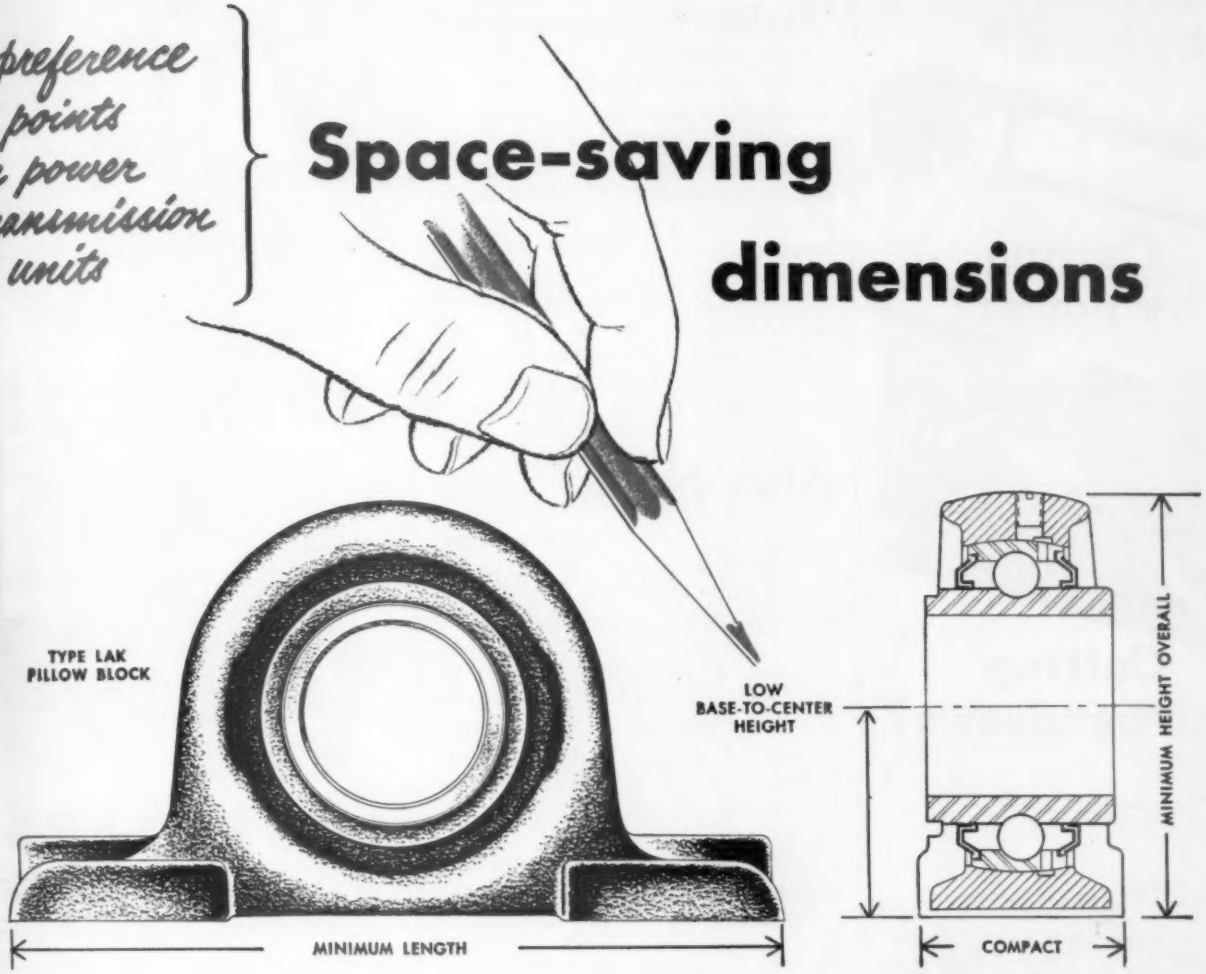
A fork-lift truck manufactured by The Union Metal Mfg. Co., Canton, Ohio can be converted into a "front-end loader" in the 30 seconds required to attach the scoop to the auxiliary lifting mast of the truck. The scoop is used to pick up, transfer and dump loose materials like sand, coke turnings, castings, stampings, etc., with no loss of material in transit. Dumping can be done at any desired height, from a few inches to the full fork lift of the truck.

Air Centrifuge for Continuous Dust Removal

More efficient continuous dust removal and particle recovery from air and gas is achieved, says Superior Separator Co., Hopkins, Minn., by means of its air centrifuge. It operates with high efficiency in the very small particle size ranges. It is continuous and nonvarying over an unusually wide variety of temperature and humidity conditions—temperatures ranging up to 200 degrees higher than standard filters. The compact machine is adaptable to plant air flow systems wherever industrial processes involve machines such as grinders, pulverizers, mixers, blenders, etc.

preference points on power transmission units

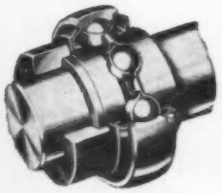
Space-saving dimensions



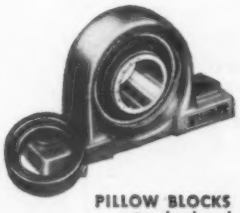
The compact, overall dimensions of Fafnir Ball Bearing Power Transmission Units are frequently mentioned as an important reason for their selection. The saving of fractional inches in space solves many a design problem.

In most cases, Fafnir housings are designed as streamlined, one-piece castings with strength equal to or greater than the bearings they incorporate. All dimensions, particularly from *base to center height* and *overall width* are held to a minimum to conserve space and reduce unnecessary weight. The bearing is supported over its entire circumference, thus the units can be mounted in any position.

Consider space-saving dimensions along with other advantage-points when you need power transmission units. In point-by-point comparisons, space-saving may head the list. Your Fafnir Distributor has dimensions of all units. The Fafnir Bearing Company, New Britain, Conn.



WIDE INNER RING BALL BEARINGS
. . . with Self-Locking Collar and Mechani-Seals



PILLOW BLOCKS
. . . standard and heavy series

FLANGE CARTRIDGES
. . . standard and heavy series

CYLINDRICAL CARTRIDGES
. . . standard and heavy series

FAFNIR
BALL BEARINGS
MOST COMPLETE LINE IN AMERICA

Cutting by hand?

Cutting by power?

Cutting with bandsaws?

your VICTOR DISTRIBUTOR has the RIGHT BLADE

For over half a century, quality has made VICTOR Blades the blades industry prefers – for hand, power or bandsaw work, for the tough jobs as well as the easy ones.

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SAW WORKS, INC. • MIDDLETOWN, N. Y., U. S. A.

Makers of Hand and Power Hack Saw Blades, Frames and Metal Cutting Band Saw Blades

Linear Proportional Solenoid Available For Commercial Use

The Connecticut Telephone & Electric Corp., Meriden, Conn., has developed a new linear proportional solenoid for commercial uses. Originally the solenoid was designed to highly exacting specifications for jet aircraft fuel control. However, the mechanism is applicable to other systems requiring the proportional transfer of electrical energy to linear mechanical movement. To meet specific needs, the solenoid can be produced with mechanical and electrical modifications.

Also Noted . . .

Users of electrically operated portable or semi-portable equipment will be interested in a simple, and very effective **cable fault finder** made by Joy Mfg. Co., Oliver Building, Pittsburgh 22, Pa. It locates open-circuits or low and high resistance shorts of 10,000 ohms or less for rubber, neoprene, thermoplastic or similar jacketed cable and makes possible quick repair.

A combination **cleaner-corrosion inhibitor** is announced by Solvay Process Division, Allied Chemical & Dye Corp., 61 Broadway, New York 6, N.Y. It can be used for cleaning iron and steel cargo tanks in tankers and for other containers handling light hydrocarbons, inedible oils, solvents and inorganics. The product, Nitrox, combines cleaning action of caustic soda with inhibiting action of sodium nitrite.

An improved **oil and grease resistant flooring,** known as Sylox, has been developed by United Laboratories Inc., 16801 Euclid Ave., Cleveland 12, Ohio. It is a type of oxychloride cement that is highly resistant to oil, grease, fats and solvents. Sylox is a complete flooring unit in itself and no outside ingredients need be added. Each unit is factory-made to cover a specified area.

A conveyor belt that reduces eye fatigue on the inspection line is the contribution of Main Belting Co., Room 170, 1241 Carpenter St., Philadelphia 47, Pa., to an efficient production department. The green color of the abrasion resistant conveyor belt has been shown to reduce eye fatigue during assembling or inspecting of radio chassis, tubes, shells, etc.

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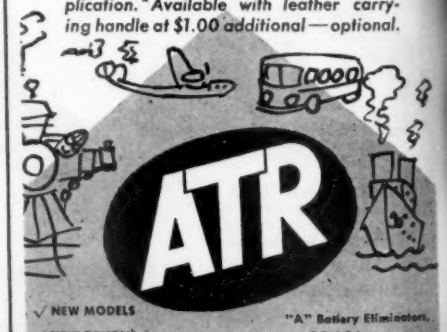
Type	Input DC Volts	A.C. Output 60 Cycles	Output Wattage Int.	Output Wattage Cont.	Consumer Net Price
6-LIF	6	110 volts	40	35	$25.55
12-LIF	12	110	50	35	25.55
* 6-RSD	6	110	85	75	39.25
*12-RSD	12	110	125	100	39.25
32-RSD	32	110	150	100	39.25
110-RSD	110	110	250	150	39.25
*12T-HSG	12	110	250	200	96.45
110AT-RHE	110	110	325	250	56.95

*There is an ATR model for most any application. *Available with leather carrying handle at $1.00 additional—optional.*



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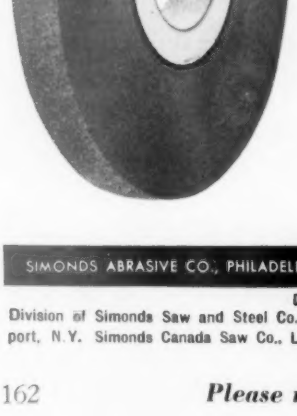
the right "intake" for grinding "output"

SIMONDS ABRASIVE CO.

Grinding Wheels



To turn out top quality production, take in top quality wheels . . . Simonds Grinding Wheels. They're second to none in quality, economy, dependability . . . and in the variety and completeness of the line they comprise. It includes grinding wheels, mounted wheels and points, segments and abrasive grain . . . everything you need for roughing, finishing, cutting off, sharpening, polishing. No matter what *your* jobs call for, call on your Simonds distributor for prompt service that gives you superior grinding wheel performance.

Write for free data book and name of your Simonds Distributor.

SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON

DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N.Y. Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

Pinpoint inspection of inaccessible parts and equipment is possible for mechanics, precision workers and inspectors with a new **industrial flashlight.** It has a patented built-in dual lighting system providing a probe-light. It has both a 1000-ft. flashlight beam and flexible slide out cable. An extension tube encased in side arm can be goose-necked into out-of-way spots. It is a product of U. S. Electrical Mfg. Corp., 222 W. 14 St., New York 11, N. Y.

A one-coat aluminum paint, manufactured by Joseph Dixon Crucible Co., Jersey City, N. J., has been proved by tests to be able to resist all types of weather and retain its aluminum color. Painted steel panels were compared, after exposure to the elements and fumes in a highly industrialized area, with panels covered with another paint. In the third year of exposure the Dixon paint is intact while the other has lost all aluminum appearance.

A new series of **drawing lubricants,** designed for light press work where speed, ease of application and removal are prime factors, has been developed by the Van Straaten Chemical Co., 546 W. Washington St., Chicago 6, Ill. Designed originally for drawing or forming stainless and high alloy steels, they also work well with carbon steels. The lubricants practically eliminate die breakage, tears or pick-ups.

Sel-Rex Precious Metals Inc., 229 Main St., Belleville 9, N. J., has developed a **copper purifier** which does away with the periodic dumping of copper plating baths by removing harmful solution breakdown impurities and converting them to useful cyanides. Addition of the purifier to the plating bath sharply reduces cyanide consumption and increases cathode efficiency of the solution.

A new series of hermetically sealed **selenium rectifiers** offers greater efficiency and much better heat dissipation than previous similar units. Rated up to 130 v a-c, 12 milliamps continuous d-c, the rectifiers meet JAN and MIL specifications for high temperature, vibration, shock and salt spray. They are designed for use in d-c relays, bias supply and surge suppressors. Bradley Labs. Inc., New Haven, Conn., make them.

INFORMATION FOR PURCHASING MEN

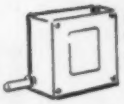
Reduced voltage starter

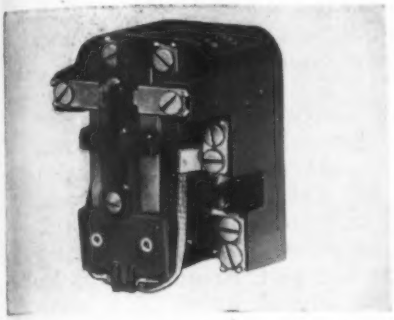
Heavy and standard-duty push-button stations

General-purpose relay

A-c and d-c solenoids

Roller-lever type limit switch

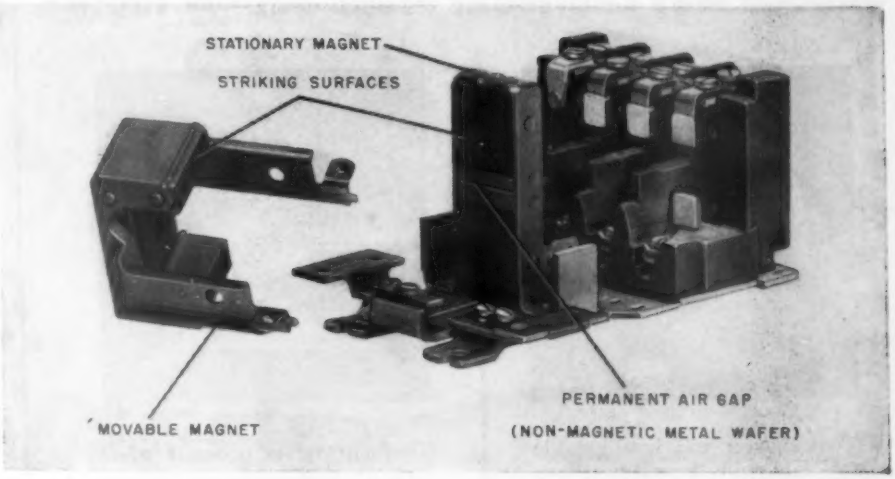

Rotating-type limit switch



NEW GENERAL-PURPOSE RELAY REDESIGNED FOR LONGER LIFE

The new **CR2790E** relay reduces your inventory—the basic relay and accessories meet a variety of applications. For general control-circuit applications, as a fractional-hp motor starter or, in combination with a magnetic switch, for controlling larger motors. Continuous current rating is 10 amps up to 300 volts on AC or DC. New long-life shunt assures top electrical performance. Bulletin GEC-257C lists available accessories, ratings and dimensions.

G-E MAGNETIC STARTER FEATURES PERMANENT AIR GAP



The G-E starter has a **permanent** air gap, a non-magnetic metal wafer mounted in a stationary magnet structure. Magnets never stick closed because of residual magnetism. The air gap is safely away from striking surfaces so the movable magnet cannot wear it down, no matter how often the starter is operated.

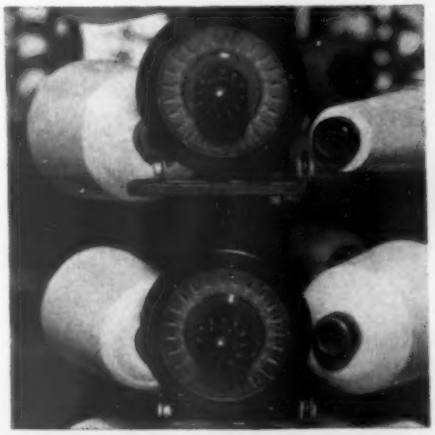
On some starters the air gap disappears as the magnets wear. With a G-E starter, however, you can be sure that every time you push the STOP button the magnet will drop out and stop the motor.

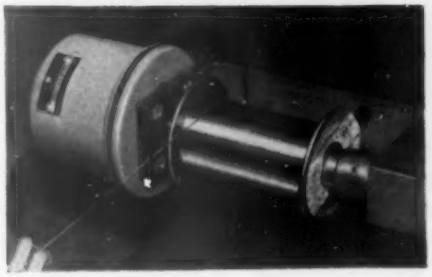
You're assured reduced maintenance, long mechanical life when you specify G-E magnetic starters.

NEW MAGNETIC BRAKE KEEPS TENSION CONSTANT

G.E.'s new tension brake—the first of its kind—is a magnetic device free of the basic disadvantages of friction devices, such as wide tension variations and undue wear. You'll find applications for the new brake wherever a constant tension is required—for yarns, rubber, glass fiber, and small diameter wire. Simple and compact, the brake holds tension constant at all speeds.

The size 200 brake has a torque range from 0.1 to 0.5 oz. in. and a tension range from 4 to 10 grams. Shown at the right in a textile application, the brakes are mounted on a magazine-type warping creel. The larger brakes, sizes 300 and 400, have a torque range of 1.4 to 14 oz. in. over a speed range of 0 to 1500 rpm. Write for Bulletin GEA-5867.





Size 400 tension brake in resistor wire-winding application. Increase or decrease tension by turning easy-to-read, calibrated adjusting cap.

NEW G-E STOCKING PLAN ASSURES PROMPT SHIPMENT

G.E.'s new Prompt Service program assures you faster, better service for your order. The program is based on perpetual stocking in your area, and prompt shipment of widely used general-purpose devices. You pay no premium for this service and you'll need no follow-up on these orders. You can reduce your control inventory. Check coupon for complete information.

General Electric Company
Section C730-46
Schenectady, N. Y.

Please send me the Prompt Service Bulletin listing the general-purpose control devices stocked for immediate delivery in my area.

Name_____

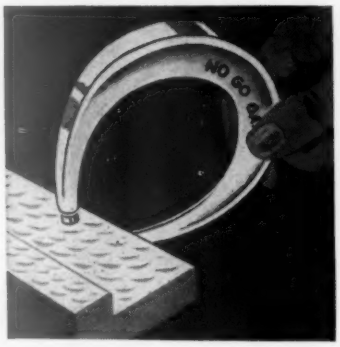
Address_____

For more information contact your nearest G-E representative, agent, or distributor, or write Section C730-46, General Electric Co., Schenectady 5, N. Y.

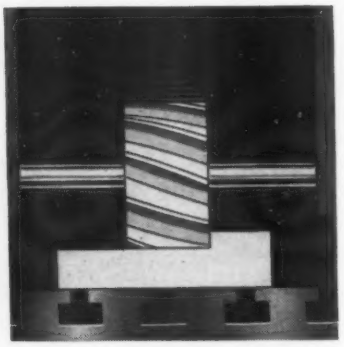
GENERAL ELECTRIC

HOW TO END DAMAGED WAYS, PRODUCTION LOSSES

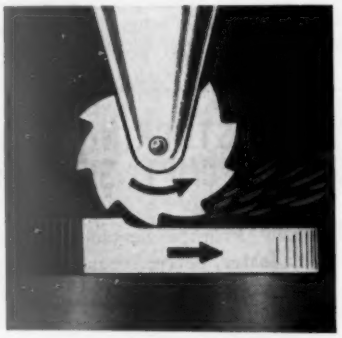
Sunoco Way Lubricant Stops "Jumpy Table"



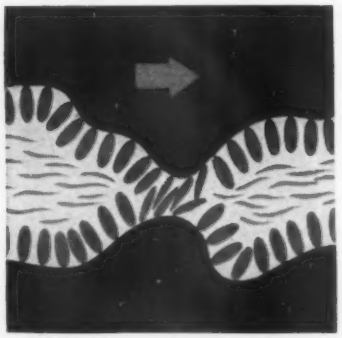
Tool chatter and jumpy table are machining headaches. Too often they cause poor surface finish, failure to hold tolerances, production losses.



Tool chatter is a result of a lack of rigidity in either the machine or the set-up. It is a mechanical problem and no lubricant can lick it.



Jumpy table is a stick . . . slip . . . stick . . . slip action of the table and is a lubrication problem. Though just as damaging as tool chatter, it is not always detected when the cause of poor surface finishes.



Extreme Magnification

Sunoco Way Lubricant cures jumpy table. It contains special compounds that form a film, like the nap of a rug, on the sliding surfaces and minimize the force of both static and kinetic friction.

Why take a chance of damaging your ways? These integral parts of the base casting for your machine are difficult to refinish and costly to replace. For more information about Sunoco Way Lubricant, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. PG-9

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

SUNOCO®

PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL

The Dayton Rogers Mfg. Co., Minneapolis 7, Minn., is offering for free distribution, in a new container and mailing case, samples of their **layout fluid.** The bottle container is provided with a combination brush-in-cap for applying the material to the surface of all metals previous to layout and machining. Request on company letterhead.

All purpose **Civil Defense shelter signs** that will stick to any smooth surface, are being made by Halco Co., 165 Dwight St., New Haven 2, Conn. Each sign consists of 2 separate pieces, a "shelter" part and an "arrow" part. Arrow part can be pointed any direction. No glue, water, tacks or scotch tape are needed as signs are self-adhesive.

Corrugated aluminum sheets for roofing and siding that are 48" wide, as compared with a 26" width for sheets formerly available, effect considerable economies. Because these wider sheets require fewer side laps, 30% less metal is required, 30% fewer fasteners, and there are 30% fewer sheets to handle. They are made by the Building Products Div., Reynolds Metals Co., Louisville, Ky.

A high gloss, self-polishing floor wax, also eliminates troublesome pests such as roaches, ants, waterbugs, etc. The insecticide floor wax is made of the best quality waxing ingredients, featuring imported Carnauba wax, and also contains the latest insecticide discovery, Lindane. It is made by the Pyrox Chemical Co., 1035 45th Ave., L.I. City, N.Y.

A new convenience and safety idea has been incorporated into **pliers** by the Utica Drop Forge and Tool Corp. A cushion throat has been introduced which acts as a third hand to hold the short end of the wire during and after cutting. The cushion is tough, rubbery Plastisol, bonded in the throat beside the plier's cutting edges and is particularly useful when cutting electrical or spring wire.

A two-station **intercommunication system** that requires no wired installations and that can be plugged into any electrical outlet is being put on the market by Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago, Ill. It provides noise-free communication and is designed for instant or temporary installation. Users can talk between offices, plants, warehouses, etc.

Office Equipment and Supplies section of PURCHASING Magazine

SEPTEMBER, 1953

The reception area on the executives' floor of the Prudential Insurance Company in Houston, Texas, is a striking example of modern design and functional efficiency.

PURCHASING MAGAZINE—A CONOVER-MAST PUBLICATION
205 EAST 42ND STREET, NEW YORK 17, N. Y.

Advancement of Office Mechanization

by Ray R. Eppert, Executive Vice President
Burroughs Corporation

an address before the
National Office Management Association Annual Conference
Boston, Massachusetts—May, 1953

Mr. Eppert's address to the NOMA convention, which is concluded in next month's issue, is presented with a two-fold purpose. Primarily it provides the background of the development of office growth and records keeping. It explains the tremendous strides of the office equipment industry in reaching for the goal of office mechanization for greater efficiency. It points out, in blunt facts, that office efficiency and productivity are as vital to sound business operations as efficiency and productivity in the plant. It commands the attention of every progressive firm to analyze office procedures and office mechanization to arrive at the ultimate goal of a hard-hitting team that produces the finest, stimulates and increase sales, and offers the best service to customers.

Secondly, Mr. Eppert's address lays the foundation for subsequent office equipment articles. PURCHASING will discuss every type of office machine and procedure in today's market. Calculators, duplicators, safes, electric typewriters, etc., will be presented to the reader so that the features, use, and developments can be analyzed for various applications. Just as the knowledge of the steel or chemical market is vital to the Purchasing Agent, so, too, is the knowledge of the latest office equipment important to the efficiency, progress and success of a business.

IN view of the size and significance of the office job in today's economy, office productivity has become as important an issue as productivity in the factory or on the farm. To the thinking businessman, therefore, an active interest in the techniques and tools that can make an office a truly productive department is inevitable.

When we consider the total amount of paper work required in all business, it is clear that one of the most important supports in our economic structure is made of paper.

I need not quote statistics on the staggering number of checks and payroll reports, and other routine paper work items, needed to keep our economy in smooth running order. We have all seen them and marvelled at their size.

Yet, this kind of office work, vital as it is, by no means defines the limits of the clerical job today. The experience of World War II demonstrated as never before, the need for a new dimension in the concept of an office—namely, as a control and guidance center. At that time, naturally, production was our paramount concern. And to reach production goals, manpower and material were not of themselves sufficient. A third element was needed: records, adequate up-to-date records, which would enable management and government at any time to evaluate the current situation.

Today, it is an accepted fact that suitable records of this kind are indispensable to a smooth running and efficient production operation. They are a "must" if we are to have sufficient raw material to cover requirements, if finished parts are to be stocked in adequate number, if components are to be ready at the appointed time in the assembly process. Without proper information, there will be deficits or overages of machine hours, and the proper manpower will not be available at the right time and at the right place.

are you sure you're seeing straight about pencils?

Are you getting the most for your money . . . or are you buying inferior pencils that add up to greater cost in the long run?

You can get greater efficiency and greater economy with the Venus Velvet. It writes smoother because the lead is homogenized by Venus' exclusive *Colloidal Process* — which insures perfect uniformity of lead from top to bottom . . . no hard spots, no soft spots. Because the lead is *Pressure-Proofed* it is sealed firmly in the wood. This means fewer sharpenings, longer life.

Take a good look at the Venus Velvet. See for yourself how it gives you more for your money. Write for free sample on your company letterhead.

nothing writes like a VENUS **velvet**

Venus . . . trademark of fine craftsmanship in pencils

AMERICAN PENCIL COMPANY • HOBOKEN, NEW JERSEY

By providing management with the data necessary to meet these requirements, the office performs a service to our economy as valuable as it is unpublicized.

But our industrial development has made great strides since those trying times early in World War II. Production is no longer our number one problem. Our concern is primarily with distribution. More and more now, the buyer of the last decade is becoming merely a prospect. And as this trend continues, there is an increasing need for the services of the office in the guidance and control of our distribution forces.

Up-To-Date Records

Again it is a question of records—prompt, suitable, up-to-the-minute records. Their function as an aid to the marketing effort has opened up a whole new field of opportunity for the office to function as an aid to management in this vital activity.

There is really no aspect of business life which is not, in some important way, dependent on the various functions the office performs. Yet, in these days of rising costs and dwindling profits, the right records for planning, coordinating, controlling, measuring performance—all take on an even greater significance. The fact of the matter is that the old and comfortable phrase "a safe margin for error" has become a complete misnomer. In view of the slim profits characteristic of most contemporary business operations, management decisions, based on stale information or guesswork, can be suicidal. Management must know. And the difference between guessing and knowing, in any business, boils down to the proper use of adequate records. More so, therefore, than ever before, it is imperative that the office keep management fully informed of today's situation—today.

The office has loomed into prominence as a functional entity in our economy. Daily, the demands made upon it grow. And the size of our total office force—now over eight million strong, is still on the increase. But in this day and age, there is another side of the coin. I refer to the biggest problem any company faces today—the high cost of doing business. It is crystal clear that the office activity itself, which accounts for over 12% of our entire employed population, represents, even in the average business concern, a "cost center" of major proportions. In any enterprise it is large enough an operation to cut a sizable slice out of a profit margin seemingly assured by high levels of productivity in other departments. Indeed it is quite possible for a business to find itself in serious financial straits merely as a result of excessive office costs.

With profit positions as precarious as they now are, another point is especially meaningful.

We do not usually think of the office as a profit making activity. Yet, every $100 saved through improving office productivity is the equivalent of $2,000 worth of sales at a 5% profit rate. Naturally, the reverse of this equation is equally true. Every $100 spent in the office—wisely or wastefully—must be paid for with $2,000 worth of sales at the same profit rate.

In today's business climate, therefore, it is obvious that the office cannot be allowed to muddle through. As with any other department, it is essential not only that the job be well done, but done efficiently and economically as well. Waste and inefficiency, after all, know no departmental boundaries. And in view of the circumstances, it is only sensible to grant that the productivity of the office clerk deserves as careful consideration as that of the man on the factory bench or the salesman in the field.

Productivity and Efficiency

In terms, then, of productivity, of efficiency, how is the office doing? Are we really getting our money's worth from it? How does it compare with other departments?

The record shows that on the whole, the office has fared less well in improving productivity than have other activities. In manufacturing, for example, production has more than tripled in thirty years, with only a 50% increase in manpower. In farming, production has gone up 50% since 1920, and farm population has actually declined one third.

By contrast, our national office force has doubled in the last twelve years to over eight million, and we are adding to its numbers all the time.

The feeling, moreover, is widespread that for some years the productivity of the individual office worker has actually been on the decline. Perhaps largely because of competing industrial wage rates and increased fringe benefits in the factory, the difficulty of hiring high caliber office personnel has become a common complaint. Office wages are rising, and training costs have gone up tremendously owing to rapid turnover.

Altogether, these considerations would seem to present a singularly gloomy picture: a constant need for more office people who are likely to produce progressively less for progressively more pay!

While the contrast speaks for itself, I do not wish to make it seem greater than it really is. Here certainly, it is not a situation of black versus white. Had the factors which caused progress in manufacturing and farming been totally absent in the office, there would now be so many more people in our offices that the rest of our economy would hardly be able to function at all.

Room For Improvement

However, we must face the fact that the all-out effort to improve productivity has yet to be made as intense in the office as elsewhere. Although we have witnessed some progress, there is certainly considerable room for improvement. And in view of the importance and cost of today's office job, it is essential that the clerical worker be made as productive as the factory worker or the worker on the farm.

In order to achieve this objective, we would do well to examine carefully the well proven methods of factory production. And there is good reason to do so. For the office *is* a production department. Although the output is reports and records rather than automobiles or fountain pens, from beginning to end there is (or should be) a close analogy between the two activities.

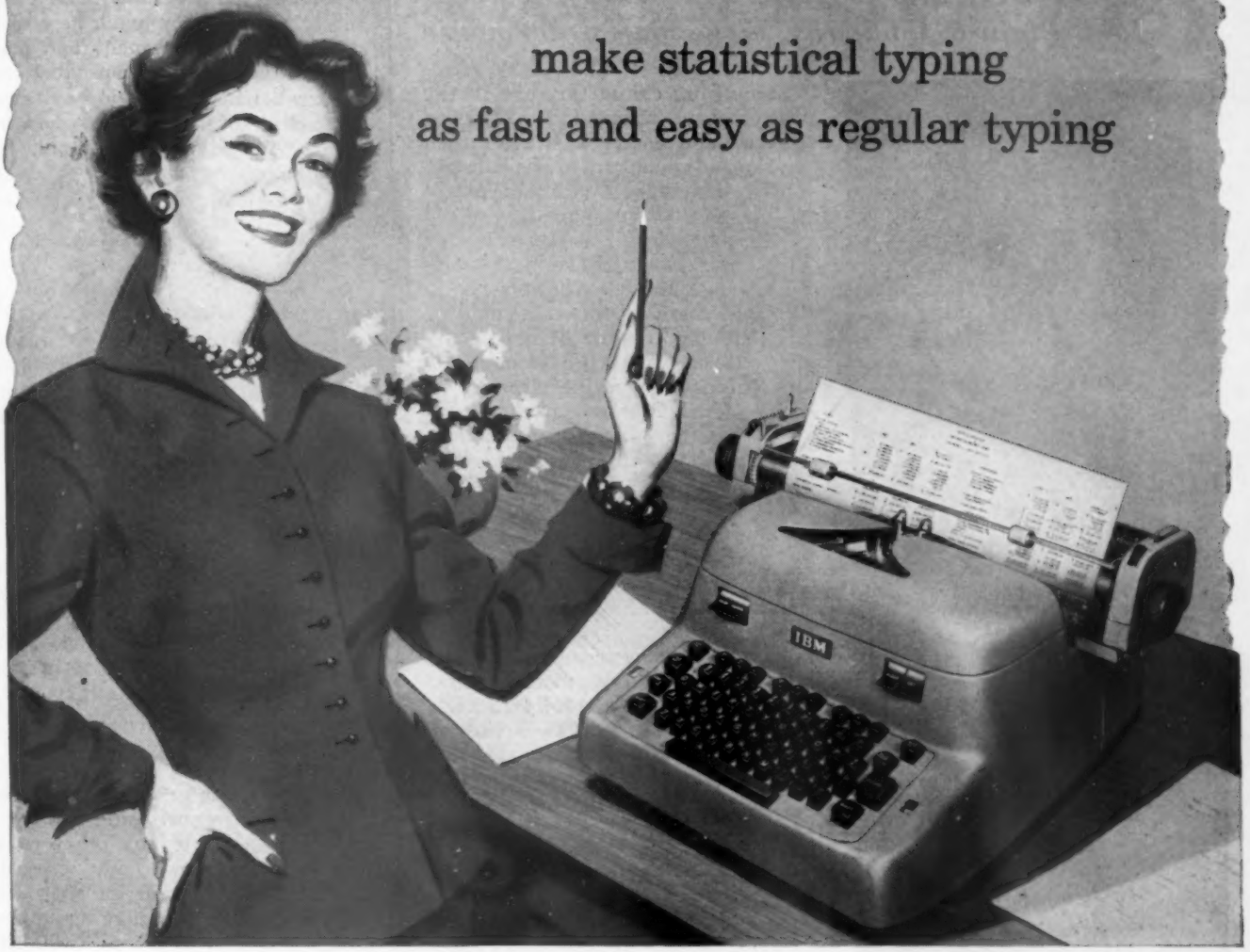
The origin of any consumer product you can think of stems from someone's idea that a need for that product exists. No one would dream of manufacturing anything these days unless they had every possible assurance that it could be sold—that a need for it could be demonstrated. Infinite pains are taken in researching the market to determine saleability and to decide the exact specifications the product should have to give it the greatest possible sales appeal.

We all know something of the time and expense that is devoted to the planning of production. In engineering the pilot model, great care is devoted to the design and selection of materials. Consider the problems involved in engineering for production—and the labor and

(*Please turn to page* 176)

These 9 keys

make statistical typing as fast and easy as regular typing



Every typist can be a statistical typist with IBM's electric decimal tabulation . . . nine keys, built right into the keyboard of an IBM Electric Typewriter, take the drudgery out of tabular typing, make it as fast and effortless as typing a business letter.

The mere touching of the proper decimal tabular key speeds the carriage automatically to the correct amount position within the column. Each figure lines up exactly, with no back-spacing, no waste hand motion, no lost time.

This same model, having all the advantages of standard IBM Electrics, produces better-looking work in less time, with less effort on every typing job. Write today for a demonstration or illustrated brochure on the IBM Decimal Tabulation model.

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INTERNATIONAL BUSINESS MACHINES

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☐ *I'd like to see the IBM Electric Decimal Tabulation Typewriter.*

☐ *Please send brochure.*

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Company _____

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City _____ State _____

"I PICKED UP $2340.00 by a mere stroke of luck"

says Walter H. Richter, president,

John Plain & Company, large mail order house

"Something caught my eye in the wastebasket... a magazine I had flipped through and discarded. It was turned up to an ad which promised a substantial increase in work output of stenographers and typists. When they talked about getting more work out of our girls, and giving them more comfort, well, I wanted to be shown.

"They told how this gain could be accomplished simply by giving the girls posture-right Cosco chairs—designed by seating engineers to reduce fatigue, increase efficiency.

"It said that fatigue-caused errors, work-lag and too-frequent pauses for rest and diversion would drop sharply, while work output would soar. It was an impressive story.

"So I asked for a demonstration. We have 50 typists and stenographers on whose work output we keep a close check. To make a long story short—after a convincing trial—we gave all 50 of them Cosco secretarial chairs.

"These girls average $50.00 a week and had been producing an average of 20 letters a day. After installing Cosco chairs their output showed a 10% increase—and has held to that ever since. This 10% increase represents an annual saving to us of approximately $2340.00. . . almost one extra girl's salary. As a result, in our eight stories of offices, we now have an installation of over 300 Cosco chairs." Such results and savings are worth looking into. For full details on Cosco chairs, send coupon today. Hamilton Manufacturing Corporation, Columbus, Indiana.

COSCO Office Chairs

Model 15-F—Secretarial

$29.95*

*$31.00 in Florida, Texas and 11 Western States (Zone 2)

Please attach coupon to your letterhead

COSCO Office Chairs, Dept. P-9
Hamilton Manufacturing Corporation
Columbus, Indiana

Without obligation, please send me full details on COSCO office chairs and name of my nearest dealer. I am particularly interested in:

☐ Secretarial chairs ☐ Executive chairs
☐ Side Chairs

Firm.....

By.....

Address.....

City..... Zone.... State.....

(*Continued from page* 174)

knowledge required to design the various parts so they may be mass manufactured and assembled at the least possible unit cost. Remember the attention paid to the selection of the best possible tools and dies, the time that goes into the planning of an assembly line and to the training and organization of all production personnel.

Before such an audience, there is surely no need to explain how each step in the development and production of a consumer product has its parallel in the development and production of a clerical record or report. And I submit that only by recognizing the similarity and by taking intelligent action on it can we prevent the office function from "costing" us out of business.

The First of Two Basic Factors

It remains for me to mention, however, the two basic factors which I feel have brought about such an extraordinary productivity increase in farming and manufacturing. The first concerns those three big "M's"—Manpower, Methods and Mechanization—or to put it a little differently, the concept of multiplying the strength of manpower through methods and mechanization. Long ago, industry and agriculture found it necessary to provide labor with the right tools and to see to it they were employed in the right way. The result of so doing, as we know, made history.

The second factor may be summed up in what I like to call the philosophy of obsolescence. And to it, perhaps more than to any other consideration, we owe our present standard of living and the magnificent progress our country has made in the last half century. For it is this philosophy that leads us to discard a machine, or a procedure—not because it is no longer a good machine or a good procedure, but simply because there is a *better* one, one that will do the job more competently, more quickly, and at less cost.

Any discussion of productivity must inevitably boil down to an evaluation of these two factors in the activity concerned. This is as true of an office as it is of a factory or a farm. And only by taking our cue from the factory and the farm can we raise the standard of office productivity to the level so sorely needed.

These considerations have presented the office equipment indus-

(*Please turn to page* 362)

ONE RECORD CONTROL IN PURCHASE FOLLOW-UP NO REMINDER TICKLER SYSTEMS NEEDED

A fact recognized and mutually agreed upon by all purchasing agents, is this: a purchase order placed is of no value until the order is acknowledged and the material received. That is why more and more purchasing departments are searching for new and better ways to make purchase order follow-up easier, faster, and more efficient. The need for such methods, especially in plants with both military and industrial demands to meet, is extremely urgent.

One of the most effective systems yet developed to follow up purchase orders and help insure maximum factory production, is the new "single source" *VISI*record visible vertical system. According to reports of Purchasing Agents at the Bausch & Lomb Optical Company, Bell Aircraft Corporation, Chevrolet - Tonawanda, Marshall Field & Company, Moore Business Forms, U. S. Graphite, and others, the *VISI*record method has been applied with remarkable results, in time saved, great efficiency, economy and reduced personnel turnover.

Instead of depending upon several copies of the original purchase order, filed in different units, the *VISI*record system controls purchase follow-up through *one record card* obtained as a "by-product" of order writing. This card, which can be created as a copy of a multiple-copy carbon interleaved set, or as a copy of any duplicating system, is placed in a specially designed *VISI*record units. It can be filed in any sequence desired—by vendor and order number, or merely by order number. Because of the unique "three-dimensional" control feature, the name of the *Vendor*, the *Purchase Order Number* and the *Follow-Up* date are always instantly visible on every open order filed. Leafing through filed copies of orders and consulting separate memo pads is eliminated. Instead, sight-scanning of rows of cards, using the visible margin signals, is accurate and fast, and permits control at the rate of 10,000 to 12,000 records per hour. Every control element is always completely visible.

All operations *related* to follow-up are also faster and simpler, and leave less room for errors and duplication. Postings of acknowledgments and promises, change notices, partial shipments and follow-up notations are all expedited by the "finding" speed and ease obtained only through the *VISI*record method. Purchasing Agents advise that this method is 35% to 50% faster than other systems used.

An interesting and important aspect of all *VISI*record systems, whether they are tailored for Inventory Control, Production Control, Credit Operations, etc., is that wherever such an installation has been made, operating along with other systems, clerks have actually competed with each other for the "choice" assignment of the *VISI*record units. They have found the work easier, less tiring, more accurate, more satisfying. The advantages to management of having such a wholesome personnel attitude toward the job are obvious and immeasurable.

For further information on Purchase Follow-Up, and for a free survey of existing operations with no obligation, write to *VISI*record, Inc., Dept. P, Copaigue, L.I., N.Y.

Advertisement

THE PEN THAT FILLS ITSELF

Here's a new kind of desk pen—with the *fountain in the base* instead of the pen. Pen instantly fills itself every time you return it to the socket.

ASK YOUR STATIONER FOR A DEMONSTRATION

Finger grip never touches ink. No chance for ink to touch you.

Point instantly interchangeable, instantly renewable in case of damage.

Fountain base "ink-locked" against accidental spillage. Only the pen unlocks the ink. Pen writes 300 words or more without redipping.

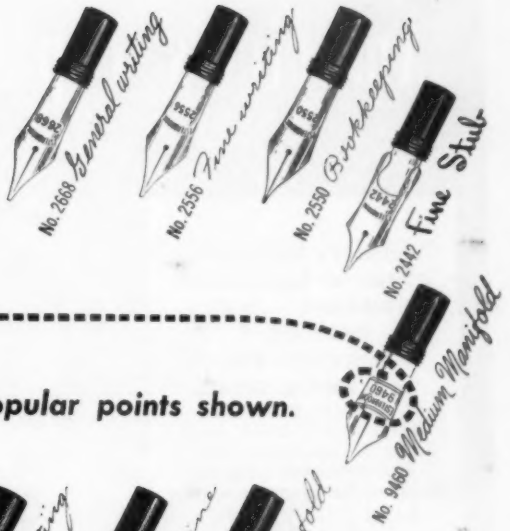
Fountain base holds 40 times more ink than ordinary fountain pen. Won't leak. Won't flood. Easy to clean as a saucer.

MODEL 444
Heavy glass base. Choice of black, clear, green, gray or maroon.

MODEL 445
For public counters. Black, clear, green, gray, or maroon base.

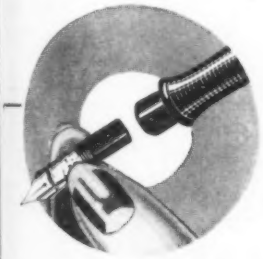
Esterbrook®
DESK PEN SETS

CHOOSE the right point for the way YOU write — by number

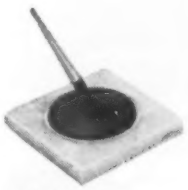


World's largest selection of point styles. Only most popular points shown.

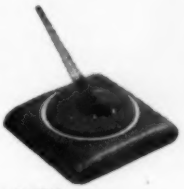
No. 9314M Medium stub
No. 2314F Fine Stub
No. 2048 Shaded Writing
No. 2284 Signature Stub
No. 9788 Shaded Writing
No. 9668 General writing
No. 9556 Fine writing
No. 9550 Extra Fine
No. 9461 Fine Manifold



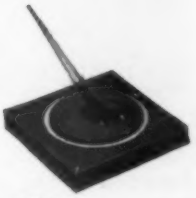
TO SELECT OR REPLACE ...HERE'S ALL YOU DO



MODEL 4430
Genuine Onyx base.



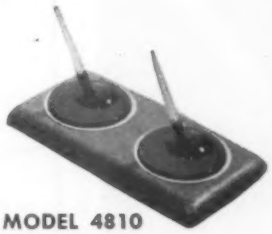
MODEL 4410
Maroon, green, or walnut Permalite base.



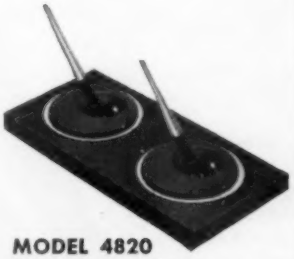
MODEL 4420
Black Carrara base.

• • • • • • ASK FOR A DEMONSTRATION OF THE "INK-LOCK" PRINCIPLE • • • • • •

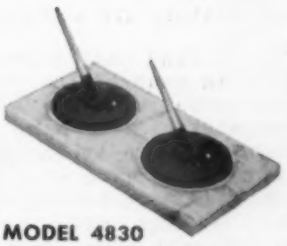
MODEL 484
Heavy glass base. Choice of black, clear, green, gray, or maroon.



MODEL 4810
Maroon, green, or walnut Permalite base.



MODEL 4820
Black Carrara base.



MODEL 4830
Genuine Onyx base.

Esterbrook®

America's Pen Name Since 1858

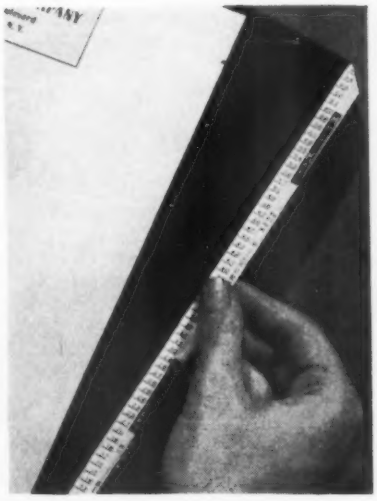
THE ESTERBROOK PEN COMPANY, CAMDEN 1, NEW JERSEY

The Esterbrook Pen Company of Canada, Ltd., 92 Fleet St., East; Toronto, Ontario

Tip from America's Top Secretaries

"Webster's Micrometric allows for better letter placement . . . makes handling of carbon paper easier," says **MARY M. THOMAS**, Secretary to the Vice President and Sales Manager of **Ford Instrument Company Division of The Sperry Corporation**, Long Island City, New York

America's top secretaries prefer Webster's Micrometric Carbon Papers because they're helpful and easy to use. The scale edge measures the paper — tells at a glance how many lines of typing space remain on any page. The uncoated scale edge means that messy carbon smudges on fingers and letters are a thing of the past.



You'll find that Webster's makes work in your office move faster. Its exclusive features save secretaries from many tiresome and costly re-typing jobs. And impressions from each long-lasting sheet are sharp and clean. Yet, Webster, with its exclusive Micrometric edge, costs no more than other quality carbon papers.

Try it yourself. See how this quality carbon paper can help your office cut down typing time and improve the appearance of the firm's correspondence.

F. S. WEBSTER COMPANY

7 Amherst Street, Cambridge 42, Mass.

New Fold-O-Matic Machine Introduced By Print-O-Matic

Print-O-Matic Company, Inc. Chicago, Ill., has introduced the new "Fold-O-Matic" desk model folding machine, designed to save time and labor costs whenever more than a few sheets of paper are to be folded. The machine folds 100 letters in less than one minute. An exclusive feature of the machine is "The Vertical Creaser", eliminating the need of two operations for a vertical fold.

Operated by hand, the "Fold-O-Matic" needs no electrical outlet and has no motor mechanism to adjust or repair. It is easily adjustable to handle sheets from 5" x 5" to 8½" x 14". It is made of steel with "Print-O-Green' Hammertone finish, measures 18" x 14" x 12" high and weighs only 30 lbs.

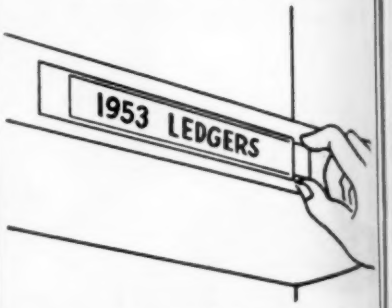
Peerless Office Equipment Detailed in Big New Catalog

A new 56-page catalog has been issued by Peerless Steel Equipment Company, Philadelphia, Pa., illustrating and describing their line of A-Grade metal office equipment. In it are included two, three, four, and five-drawer height filing cabinets of every type.

Do A Neater Labeling Job Faster With—New

BIND-X

The Revolutionary, Self-Adhesive Transparent Label Holder!



All you have to do is insert typewritten, written or printed label in the *transparent* BIND-X window. Then stick it on shelves, books, binders, boxes, or any other object. Adheres to wood, metal, leather, fiber, glass, cloth, plastic. Six inch lengths only 30¢ each. Easily cut. Holds label ½", ¾" or 1" wide. Your choice of 8 transparent colors. Ask for *new* BIND-X at your local stationer *today*.

IT'S MADE BETTER . . .
WORKS BETTER BECAUSE IT'S

CEL-U-DEX

1 Main Street **Brooklyn, N. Y.**

Southwest Airmotive reports:

"...75% MORE PURCHASE ORDERS

WITH REMINGTON *Electric* TYPEWRITERS

This startling figure came right out of an efficiency report made by J. J. Nelson, Purchasing Agent at SAC. In his own words: *"With the new Remington, we can turn out 75% more purchase orders. There are 50% more inserts and 40% more information put on each purchase order. We have clearer copies with less chance for error . . ."* This vividly illustrates how Remington Electrics are handling the flood of paperwork which swamped SAC when sales jumped from half a million dollars to six million dollars.

Increased typing production followed immediately after Remington Electrics were installed because typing is so much easier. *Electricity does the work . . .* controls the keyboard, shifts and carriage return. Typists turn out more and better work immediately.

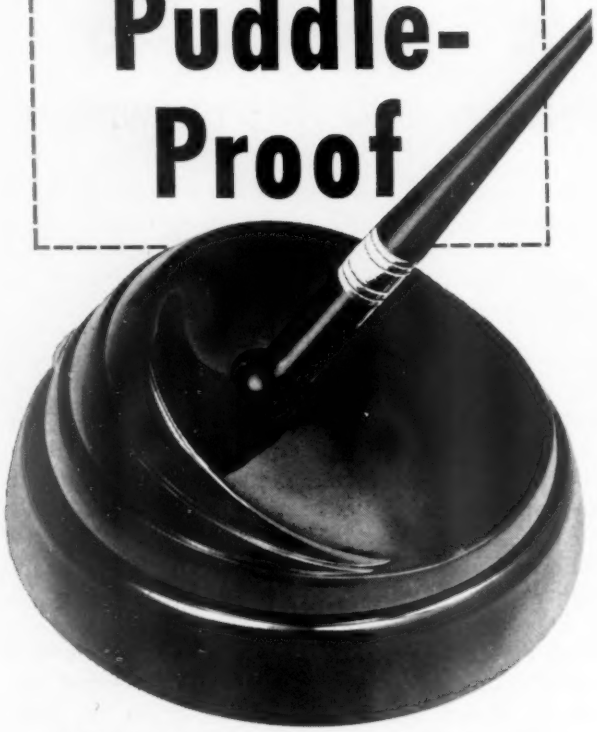
More inserts can be used because the Remington Electric's power printing and exclusive Impression Control can provide 15 and more clear, legible carbon copies at one typing . . . sufficient copies for all departments.

United Airlines, Pioneer Airlines and Glenn L. Martin are just a few of the many other organizations which have discovered the economies of electric typing. Learn how you can obtain the same benefits. Write for free demonstration or fact-filled 16-page book, "Dividends of Electric Typing" (RE8612). Address requests to Remington Rand, Room 1150, 315 Fourth Avenue, New York 10.

Remington Rand

PROFIT-BUILDING ***IDEAS*** FOR BUSINESS

Puddle-Proof



It's the new Morris miracle SAFE-T-SET with the exclusive safety feature. Tip it...tilt it...turn it upside down. Won't spill. Won't leak. *It's Puddle-Proof!* The Morris SAFE-T-SET belongs on every office desk. Saves soiled clothing, spoiled tempers. Handsome modern design in your color and the pen with a point in your favor, a Morris hard-tip point. Will hold full two-ounce ink supply and built with office rough treatment in mind. The new Morris puddle-proof SAFE-T-SET is manufactured by the foremost name in the field of *matched* desk top equipment. Your stationer can supply you. See him today.

BERT M. MORRIS CO.

8651 WEST THIRD STREET
LOS ANGELES 48, CALIFORNIA

Every Purchasing Agent Should Have These Three Books

"Management of Industrial Inventory"—$4.75

By Benjamin Melnitsky
Foreword by Stuart F. Heinritz

Here is complete and reliable information on inventory budgets, obsolescence, simplified materials controls, standard classifications, interchangeability, parts handling and storage—*and on through every phase of your inventory control work.*

How to set up a complete inventory control system . . . how to organize the inventory manual . . . how to use simple formulae that spotlight return on inventory investment . . . how to keep your in-process inventory under daily control . . . all these and more are explained thoroughly and concisely.

You will have available cost-cutting help and actual case studies on the physical inventory manual—receiving department and storesroom—physical identification—records, reports and forms—taking the physical inventory—materials handling—probable consumption—and many more.

Free 10-day Examination

"Materials Buying Manual"—$4.85

By Harold A. Knight

How you can cut costs through buying the right material for the best job—this is the valuable information you will find in this money-saving book.

You will find authoritative help on pricing methods, basing points, ordering procedures, common sizes and quantities, production centers, types of shipping containers, most profitable uses—*for practically every key material you use and buy.*

Free 10-day Examination

"Profiting From Industrial Standardization"—$5.50

By Benjamin Melnitsky
Foreword by Stuart F. Heinritz

You will find complete and down-to-earth information on materials standards and specifications . . . purchasing, process and finish specifications . . . parts standards . . . manufacturing standards . . . design practice standards . . . proper review intervals . . . and on through the entire subject of how your company can benefit from a standards program.

How to use tested methods to develop and revise standards—how to organize and use a nomenclature system—how to allocate standards activities, responsibilities and authority—how to organize company standards—all these and more are explained thoroughly and concisely in this practical guidebook to industrial standardization.

Free 10-day Examination

CONOVER-MAST PUBLICATIONS, INC.

Book Division
205 East 42nd Street, New York 17, N. Y.

IBM Announces Device To Aid In Typing Marginal Punched Forms

International Business Machines Corporation, New York, has announced a new Pin Feed Lift Platen for the company's Electric Formswriter for use with economical floating carbon paper in typing fanfold or open-web continuous forms on applications which require precise registration.

Marginally punched continuous forms are accurately fed into the Formswriter by retractable pins located at each end of the platen cylinder. The pins emerge only where necessary to align and position the form at the desired writing point.

The platen, which is available in carriage lengths of 12 and 16 inches, feeds continuous forms punched in both margins with holes 5/32″ in diameter and spaced ½″ apart from center to center. Platen cylinders may be obtained for forms ranging in size from 5¾″ to 13⅝″ in width. Suitable guides are included to properly align the forms and assure positive pin-hole engagement.

Whitaker Paper Company to Handle Escort Index Bristol

The Whitaker Paper Co., Pittsburgh, has been named as distributor of Escort Index Bristol, a 50% rag content product manufactured by the L. L. Brown Paper Company, Adams, Mass.

Felt & Tarrant Announces New Adding-Calculator Machine

A new five-column comptometer adding-calculator machine has been announced by Felt & Tarrant Mfg. Company, Chicago, Ill. The new product, with six answer dials and a capacity of 999,999, has a rugged, reinforced plastic case with baked enamel wrinkle finish. It is easily portable, weighing only 13 pounds, which permits operators to carry it from desk to desk or from one department to another.

when the requisition calls for

FIVE DRAWER FILING CABINETS

PRONTO!

then order PEERLESS

You can put full confidence in these 5-drawer cabinets. Like all Peerless filing equipment, they're A-Grade quality and built for long hard service. Their smart styling will harmonize with any office . . . rugged ball and roller bearing drawer suspension assures perfect support and easy operation . . . welded construction eliminates sway and binding.

In addition to this, the 5-drawer model provides 25% more filing capacity than the more common 4-drawer cabinets, permitting a given quantity of papers to be filed in 20% less space.

AND, these cabinets are available for rapid delivery. Complete stocks of Peerless Equipment are warehoused on both east and west coasts so you can avoid lengthy delivery delays. Consult your phone book for the names of the Peerless dealers near you.

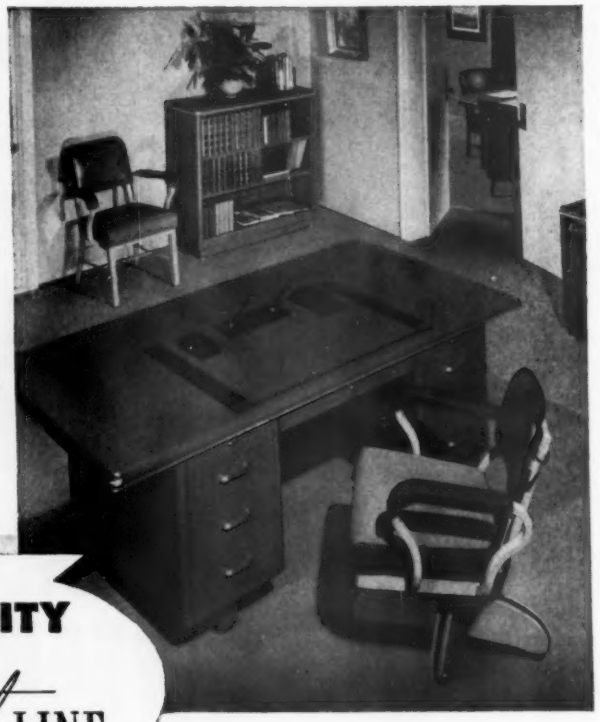
PEERLESS STEEL EQUIPMENT CO.

6624 Hasbrook Avenue, Philadelphia 11, Pa.

New York Chicago Dallas Los Angeles

IN THE BEST PLANNED OFFICES *Crest*LINE OF COURSE

Plan for *better business..* *with*



SECURITY *Crest*LINE

Your office furniture should be a business asset. It should make an immediately favorable impression on your customers and clients. It should be efficient — belong in today's office.

If your office is furnished with CRESTLINE Steel Office Furniture then you are receiving the full benefits of this job-designed office equipment. If not, then you aren't doing full justice to your business potential.

CRESTLINE Steel Office Furniture is designed for your needs as a business or professional man. With its wood-grained or solid color finishes, and matching or blending tops—you can select the CRESTLINE Furniture that will fit exactly into your office color scheme and requirements.

Fill out this coupon today and let the free CRESTLINE Office-Plan-Rule and full color catalogue help you to plan for better business.

SECURITY STEEL EQUIPMENT CORPORATION
20 MIDDLESEX ROAD, AVENEL, NEW JERSEY

Please send me the CRESTLINE *Office-Plan-Rule* and the two CRESTLINE Catalogues without obligation.

Name_____
Firm_____
Address_____
City_____ Zone____ State____

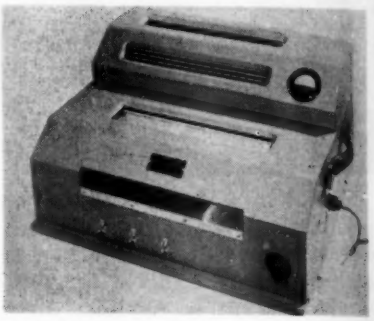
Remington Rand Issues 40 Page Booklet on Loose Leaf Binders

Illustrations and descriptions of over 20 loose leaf binders are included in a new 40-page booklet (LL234) "Binders That Build Business" released by Remington Rand Inc., New York City.

The binder line, which features improved locking and unlocking mechanisms, a wide range of holding devices, posts, prongs or pins, is available to fit every need for sales and reference binders.

Along with the binders, an exclusive printing and embossing process which personalizes the binder with trade-marks, logotypes, etc., is also described. It is known as the "Rem-Bossed Process."

Dry Photo Copy Machine Is Fully Automatic



A fully automatic dry photo copy machine, perfected by General Photo Products Company, Chatham, N. J., exposes and processes, all in one unit. It thus eliminates the need for a separate printer, as the machine combines a printer with the processing unit all in one compact machine. Because it turns out dry copies, it eliminates washing, fixing, and drying. There are no chemical fumes and no dark room is needed. It faithfully reproduces anything typed, written, printed or drawn and copies are error-free and legally accepted. Copy is processed in about 15 seconds and 60 to 90 copies can be produced an hour at a cost, according to the manufacturers, of only 8¢ each for letter size.

Diebold Names W. H. Dautel Regional Sales Manager

Walter H. Dautel has been appointed regional sales manager of the Eastern Division branches of Diebold, Inc., Canton, Ohio.

Mr. Dautel will supervise sales activities in Atlanta, Baltimore, Boston, Buffalo, Charlotte, Cincinnati, Cleveland, Detroit, Hartford, Miami, Nashville, Newark, and Pittsburgh.

You can't see SYNTHANE but it's in the picture

There are important factors about picture-making you never see in the print—the photographer, the lights, the darkroom, the chemicals. One of many materials essential to photography is Synthane—a laminated plastic.

Synthane is corrosion-resistant . . . Synthane spools carry film from early stages of emulsion coating through developing. Synthane is opaque to infrared rays which accounts for its use as slides for film packs. Synthane is an electrical insulator; you'll find it hidden in flash guns, lighting equipment and projectors. Synthane is wear-resistant and vibration-absorbing, fine for quiet gears in movie cameras.

The photographic industry is only one part of the American industrial picture, and the properties for which Synthane is valued in it are only a few of the many Synthane has. Others are good tensile, compressive, flexural, and impact strengths, dimensional stability, light weight, high dielectric strength, ease of machining. Synthane has all these properties—and more—in combination. And the combination may be valuable to you.

To get the complete picture of Synthane and its possible place in your product, write today for the 24-page Synthane Catalog. Synthane Corporation, 9 River Road, Oaks, Penna.

Here you see the three basic forms of Synthane laminated plastics—sheets, tubes and rods. All three are made by applying heat and high pressure to resin-coated laminations of paper, fabric, glass cloth or mat. Synthane is thermo-setting, has many much-sought properties in combination.

Synthane in Photography

A—16mm Reel
B,C,D—Film processing spools
E,F—Chemical-resistant screws for developing equipment
G—35mm film carrier

Synthane—one of industry's unseen essentials

SYNTHANE
S
LAMINATED PLASTICS

AMONG THE Associations

George Forbes Elected to Head St. Louis Ass'n in Coming Term

George S. Forbes, Purchasing Agent for Century Electric Company, has been elected president of the Purchasing Agents Association of St. Louis. Other officers elected to serve during the 1953-54 term with Mr. Forbes are: J. J. Ritterskamp, Jr., Washington University, first vice president; C. D. Hoffman, A. Leschen & Sons Rope Company, second vice president; J. M. Tyler, Gruendler Crusher & Pulverizing Company, secretary; Earl B. Boub, Star Manufacturing Company, treasurer; and R. H. Sperreng, Union Electric Company of Missouri, national director. Members of the executive committee are: B. O. Belknap, National Lead Company; F. J. Jost, McQuay-Norris Manufacturing Company; and Fred J. Risberg, American Stove Company.

NEW MILWAUKEE OFFICERS: New officers of the Milwaukee Purchasing Agents Association are, front row, left to right; Carl W. Failmezger, Socony Vacuum Oil Co., president; G. L. Altman, Maysteel Products Co., secretary; and H. J. Jungbluth, Oilgear Co., vice president. Standing; William G. Mett, Burlington Mills, Inc., treasurer, and K. E. Groth, Stolper Steel Products Corp., national director.

"Milwaukee Journal Photo"

DENVER OFFICERS FOR 1954: Officers of the Purchasing Agents Association of Denver gathered for a "family" portrait. Seated, left to right; Stuart H. Wolcott, Benjamin Moore Paint Co., treasurer; Allen T. Woodward, Armco Drainage and Metal Products, Inc., vice president; William R. Spaur, Winter Weiss Co., president; Eddy Saulsberry, Ideal Cement Co., secretary; and Stanley W. Swenson, Climax Molybdenum Co., director. Standing; Frank I. Ayer, Gardeer-Denver Co., director; Newman L. Sheets, Colorado Builders Supply Co., national director; and Leslie F. Robbins, University of Colorado, business manager. Carl R. Roberts, Great Western Sugar Co., alternate national director, was not present at the picture taking.

TOP MEN FOR LITTLE ROCK: The officers elected to guide the activities of the Little Rock Association of Purchasing Agents are, standing, left to right; Kyle Cook, Reynolds Metals Co., national director; Copeland Hughes, Crowe-Burlingame Co., treasurer; Marion Deason, Visking Corp., director; and Carl Wallace, Buckeye Cotton Oil, director. Seated; Harold Rogers, Aluminum Co. of America, second vice president; Hugh McMillian, Arkansas Foundry Co., president; H. R. Bean, McAlister Fuel Co., first vice president; and Fred Storm, Big Rock Stone and Material, secretary.

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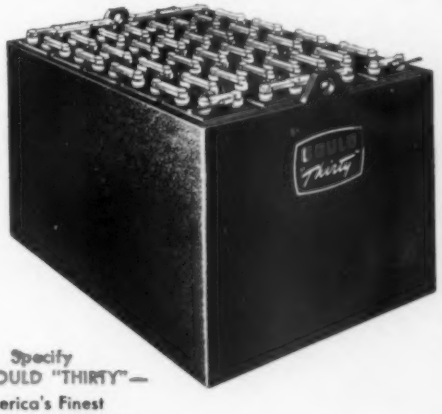

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Association and University of Florida Present Successful Purchasing Institute

The first annual Purchasing Agents Institute, sponsored cooperatively by the Purchasing Agents Association of Florida and the General Extension Division, University of Florida, was held at Redington Beach, St. Petersburg, on July 16-18.

Distinctly designed as "a school—not a convention", the conference proved such an outstandingly successful educational effort that plans are already in progress for the second institute for the summer of 1954. It was attended not only by a large percentage of the Florida Association membership, but by a substantial number of purchasing people not yet on the association's membership rolls.

The institute proceedings opened Thursday morning, July 16, with comments by Jack S. Reaves, purchasing agent for the University of Florida, and president of the Purchasing Agents Association of Florida; and Frank T. Adams, Jr., head of Extension Education for Business, University of Florida.

First of a number of guest consultants invited to the meeting, Dr. Henry G. Hodges, professor of management, College of Business Administration, University of Florida, discussed "Fundamentals of Purchasing." Dr. Hodges gave a broad review of the basic factors involved in modern buying, covering organization, purchasing principles, purchasing procedure and purchasing policies. He discussed the responsibilities involved in the purchasing function. Dr. Hodges pointed out that the decision to make or buy, alone, was of tremendous significance in the profitable operation of a company. He said the purchasing agent has a "better opportunity to cheat" than other company personnel, and therefore must make a choice to follow the "narrow and honest street or the wide and crooked street."

President Jack Reaves, (l.) and Howard Letzring, program chairman confer on meeting schedule.

Panel Arouses Keen Interest

A panel discussion on "Factors Involved in Governmental and Non-Governmental Purchasing" followed. Participants were Mr. Reaves; Dan D'Alemberte, Board of Commissioners of State Institutions, Chattahoochee, Fla.; Dr. Hodges; Truman Bean, Purchasing Agent, Jacksonville Yacht Storage Company; and Paul V. Farrell, associate editor of Purchasing.

The discussion was one of the highlights of the entire conference, drawing a good deal of discussion from the floor and covering a wide variety of purchasing topics. A particularly lively exchange occured on the question of doing business by bids or negotiation.

Following luncheon, Mr. Farrell addressed the group on "Ethics of Purchasing." He explored many of the intricate problems faced in trying to chart a course of ethical conduct in business, particularly when engaged in spending a good part of the company's income. He urged the individual purchasing man to establish some standards of ethical conduct within his own organization, then to have it accepted by management, and then presented to the entire company as the policy of management. He declared that following these steps, all suppliers should be informed that this was the code by which buying would be governed in the organization and that they would be expected to conform to it while

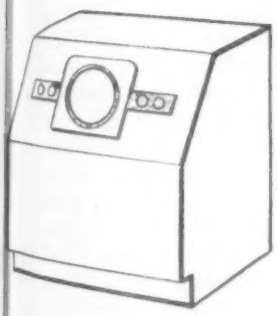
(*Please turn to page* 192)

On behalf of the Florida Association, Bill Beckham, right, accepts a Certificate of Achievement from Frank Adams, of the University of Florida. (Photos on this page by Charlie Doolittle.)

A congenial group gathered beside the swimming pool between sessions. Seated, l. to r., Dan D'Alemberte, Paul Farrell, Frank Adams, Jessie Allen. Standing, Jack Reaves, Howard Letzring, Professor Hodges, Truman Bean, Ollie Williamson.

1953

Ground Thread



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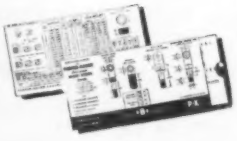

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(*Continued from page* 188)

doing business with the company.

Another lively discussion from the floor followed Mr. Farrell's talk. The points he covered in his address—the obligations of the purchasing agent to his own conscience, to his company, to his suppliers—were given a thorough airing, with many actual situations brought up for consideration.

The Thursday session closed with an address on "Inventory Control As It Affects Purchasing" by Dr. Hodges. Among the points covered by Dr. Hodges were: whether responsibility for inventory control should be given to purchasing or to some other department; opportunities for profiting from good inventory control; differences in inventory control as related to production, and to maintenance, repair and operation.

Dr. Royal H. Ray, professor of advertising and head of the Department of Advertising, Florida State University, opened the Friday morning session with a talk on "The Impact of Advertising on Purchasing." Dr. Ray related the development of the importance of the purchasing agent, and his steadily increasing power of decision as to suppliers. His talk was illustrated with a sound-slide film presentation prepared by the United States Steel Comapny showing how the extent and direction of its advertising was determined. After the talk, Dr. Ray led the group in a discussion on an advertising case study involving the marketing of a new type of paper for use in business offices.

In a dynamic, humorous, and very effective address, Dr. J. Frank Goodwin, professor of marketing, College of Business Administration, University of Florida, challenged the group with the question, "Do Your Letters Have Whiskers?" Dr. Goodwin's vivid demonstration of the power of good letters, and the alarming lack of them in modern business, was carried over to the afternoon session with a showing of the film, "Frailey's Letter Clinic." A discussion of some typical letter errors followed.

Dr. Goodwin gave another powerful talk on, "Selling the Purchasing Department to the Boss." The Purchasing Agents Institute was then closed with the awarding of certificates of attendance. A business session of the Purchasing Agents Association of Florida was held Saturday morning, with President Jack S. Reaves in the chair.

(*Please turn to page* 194)

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(Continued from page 192)

On the social, as well as the business side, the conference was successful. Many of those attending brought their families to enjoy the fine facilities of the Tides Hotel and bathing in the Gulf. On Friday evening, a banquet and dance were held in the main dining room of the hotel. An informal feature of the entire meeting was the harmonizing of a quartette composed of Jack Reaves, Truman Bean, Howard Letzring, and Vic Frees, particularly on a number entitled "What Good Are Hot Dogs Without Sauerkraut?"

* * *

Eighth District Conference To Hear Many Oustanding Speakers

With a concentration of specific programming to meet the needs of purchasing agents along the eastern seaboard, The Eighth District Conference of the N.A.P.A. will hold its meeting at the Hotel Statler in Buffalo, N. Y., from October 1st-3rd.

G. W. Howard Ahl

P. J. Clarke

Outstanding men from the 8th District have been carefully selected to address the conference and to lead the members in discussions. Some of the men selected are: K. R. Geist, director of purchasing, Allis-Chalmers Manufacturing Co.; S. V. Masterson, buyer for the Yerkes plant, E. I. du Pont de Nemours & Co., Inc.; A. J. Dickinson, Jr., vice president, Virginia-Carolina Chemical Corp.; W. H. Old, director of purchases, Babcock & Wilcox Co.; S. W. MacKenzie, director of purchasing, U. S. Rubber Co.; L. D. Miles, General Electric Co.; and S. F. Heinritz, editor "Purchasing" magazine. In addition, purchasing agents attending the conference will hear E. F. Andrews, president, N.A.P.A.; H. C. Hopkins, vice president, American Can Co.; G. W. Howard Ahl, general purchasing agent, Columbia Ribbon & Carbon Mfg Co.; C. W. Goodman, Union Carbide & Carbon Corp.; S. H. Slichter, Lamont University Professor at Harvard; Miss E. B. Gruber, purchasing agent, Bigelow-Sanford Carpet Co., Inc.; G. A. Renard, executive secretary, N.A.P.A.; and P. J. Clarke, director of purchasing, Rohm & Haas Co.

In addition to the discussions and speakers, the conference will feature an exhibit of more than 50 booths displaying products of nationally

E. B. Gruber

H. C. Hopkins

known manufacturers at its Industrial Exhibit on the 17th floor of the Hotel Statler. This exhibit will be open during the entire course of the conference and trained representatives will be on hand at all times to assist in obtaining the full benefit of displays.

Announced Program For 8th District Conference

THURSDAY, OCTOBER 1

8:00 a.m.-
7:00 p.m. Registration

9:00 a.m. 8th District Council Meeting

12:00 M. 8th District Council Luncheon, G. W. Howard Ahl, 8th District Vice-President Presiding

12:00 M.-
7:00 p.m. Products Exhibit Open

1:00 p.m. Plant Visitations. 1. Ford Motor Company Stamping Plant. 2. Bethlehem Steel Company.

W. H. Old

S. W. MacKenzie

2:00 p.m. Committee and Group Meetings, Education Committee, P. J. Clarke Presiding. Public Relations Committee, T. Stevens Presiding. Standardization Committee, C. Goodman Presiding. Women in Purchasing, E. Gruber Presiding.

7:00 p.m. "Early Birds' Dinner." Complete Floor Show

(Please turn to page 198)

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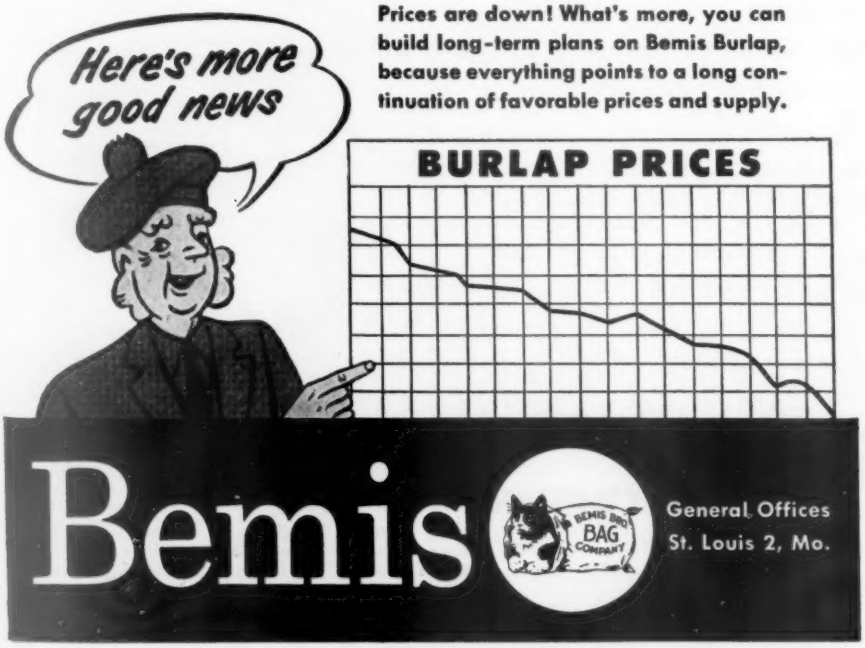

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(*Continued from page* 194)

FRIDAY, OCTOBER 2

9:00 a.m.-
7:00 p.m. Registration

9:30 a.m. Ladies' trip to Niagara Falls with Luncheon at General Brock Hotel in Canada

9:30 a.m. Opening Session: "The Economic Outlook". Professor Sumner H. Slichter, Harvard Graduate School of Business Administration

10:00 a.m.-
7.00 p.m. Products Exhibits Open

10:30 a.m. General Session: "Problems in Purchasing Administration". A panel discussion of problems presented by 8th District members. Chairman and Coordinator—P. J. Clarke. "Using Policy and Procedure Manuals"; "Using Job Analysis"; "How to set up an accurate price record". Panel Members: H. Hopkins, Wm. Old, Stan. MacKenzie, Al. Dickinson, S. V. Masterson.

C. W. Goodman

L. D. Mills

12:00 M.- The President's Luncheon. Chairman—G. W. Howard Ahl. Address: N.A.P.A. President, Edward F. Andrews, Director of Purchases for the Pitman-Moore Division of Allied Laboratories, Inc., Indianapolis, Indiana

2:30 p.m. General Session. Stuart F. Heinritz, Editor — PURCHASING —Moderator. "The Interview". (A few typical incidents to develop and emphasize some principles of buying techniques.) The Script —New York Association; The Cast —Syracuse Association; The Panel —H. F. Jones, J. Berry, G. Renard, L. Thompson

6:00 p.m.-
7:00 p.m. Social Hour

7:00 p.m. Eighth District Banquet. Speaker: To be announced

10:00 p.m.-
2:00 a.m. Dancing

SATURDAY, OCTOBER 3

9:00 a.m.-
2:00 p.m. Products Exhibit

9:30 a.m. General Session. J. A. Berry, Chairman. "Value Buying" Forum; "The Materials You

(*Please turn to page* 200)

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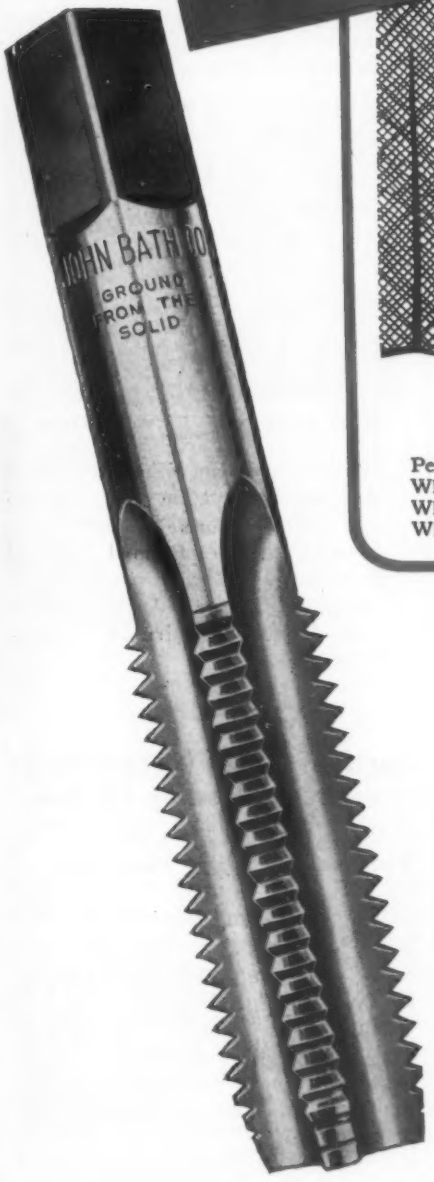

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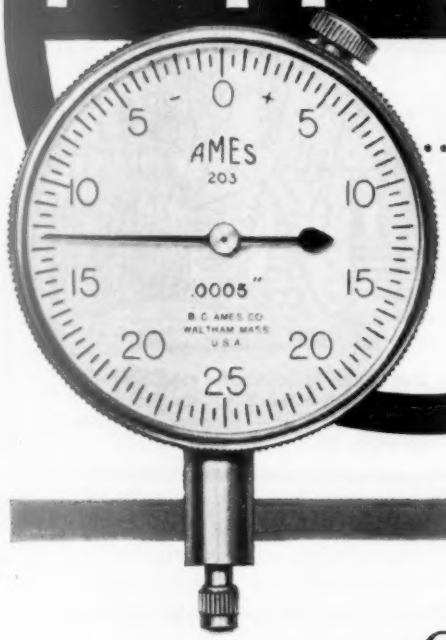

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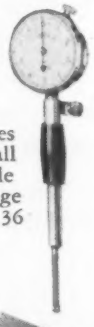

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(*Continued from page* 198)

Work With"; Ralph O. Keefer, General Purchasing Agent, Aluminum Co. of America and former President N.A.P.A.; Organization, Procedure, Policies; "The Men You Work With", L. Miles—General Electric Company; Selling Value to Others; "The Methods You May Use", K. R. Geist—Allis-Chalmers Company; Applications and Variations in the "Value Buying" Principle. Questions presented from the floor will be answered by the speakers

A. J. Dickinson

K. R. Geist

11:20 a.m. General Session. "Can the 1953 Purchasing Agent Do the Job in a Buyer's Market?" Address: George A. Renard, National Secretary

12:15 p.m.—Closing—Jack Rutherford, General Chairman of Conference

Canton, Akron, Youngstown To Hold Joint Meeting For Nov.

W. L. Brown, president of the Purchasing Agents Association of Canton, has invited the members of the Akron and Youngstown District Associations to join his members in a meeting in November. Feature speaker of the evening will be the new president of the national association, E. F. Andrews.

As a special arrangement, the meeting has been designated as "Bosses' Night" to enable some of the management executives to hear Mr. Andrews address.

Washington Agents Hold Picnic

Gaffney's Lake Wilderness Resort was the site of the 32nd Annual Picnic of the Purchasing Agents Association of Washington. Baseball, bingo, and races and contests kept the group busy during the afternoon. A chicken dinner and the awarding of prizes to the afternoon's winners climaxed the affair.

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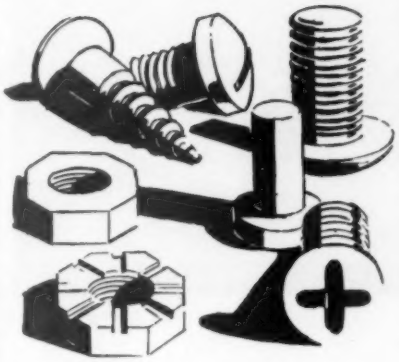

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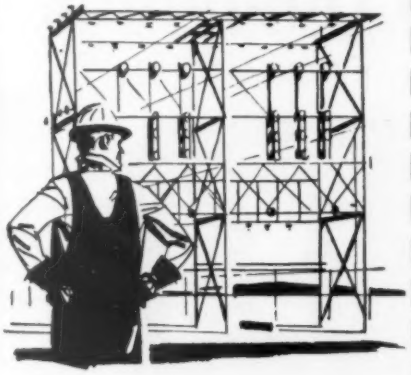

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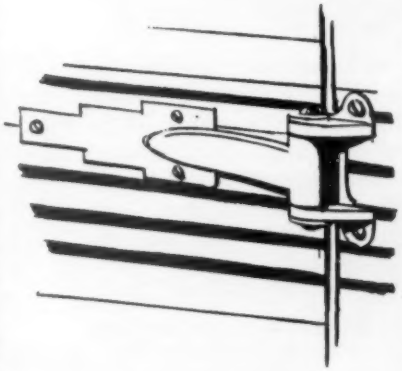

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the most complete line of refrigeration and air conditioning products in the industry.

Toledo Serv-A-Show Joins 6th District's Conference In Oct.

The Toledo Purchasing Agents Association's annual Serv-A-Show will be held this year as part of the N.A.P.A. Sixth District 1953 Fall Conference at the Secor Hotel in Toledo, October 16th and 17th.

This year's show, planned as an integral part of the Fall Conference, will be essentially like the shows of previous years in that supplier and consumer can meet personally. However, it differs in that instead of confining exhibitors to members of the Toledo Association, any member company of the Sixth District is invited to participate. This will offer the concentration of purchasing agents a greater variety of materials and products for examination and study.

NIGP To Hold 8th Annual Forum And Exhibit November 8 To 11

The National Institute of Governmental Purchasing will hold its Eighth Annual International Public Purchasing Forum and Products Exhibit at the Netherlands Plaza Hotel in Cincinnati, November 8-11.

This year the NIGP will present a professional program of unusual merit to purchasing officials from the Federal government and state and local governments as well as purchasing officials of other nations.

In addition to a purchasing forum on the most modern techniques of public purchasing, visiting procurement executives will have an opportunity to view the newest developments in industrial products exhibited by 80 outstanding American business organizations. The NIGP Products Exhibit will reflect these developments in a wide variety of interesting and informative displays.

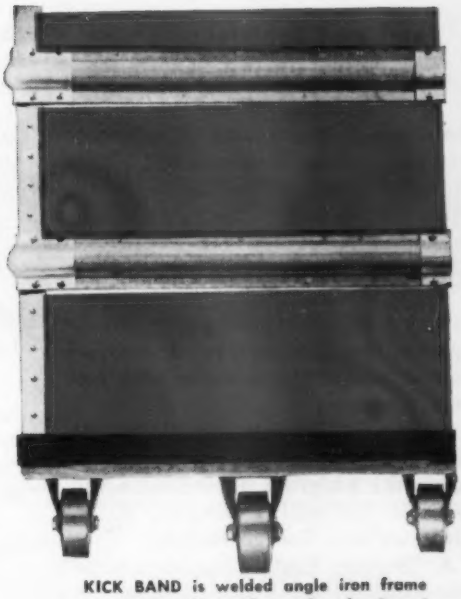
Northern Calif. Association Elects Officers For '53-'54

William S. Floyd, Shell Oil Company, has been elected president of the Purchasing Agents Association of Northern California for the 1953-54 season.

Assisting Mr. Floyd during the coming term will be: William G. Watt, California & Hawaiian Sugar Refining Corp., Ltd., first vice president; Reed H. Chase, Shell Development Co., second vice president; O. B. Sundberg, Jr., Hewlett-Packard Co., secretary; and William G. Owens, W. P. Fuller & Co., treasurer.

MOVE MATERIALS FAST...SAFE...ECONOMICALLY

with Diamond Vulcanized Fibre...



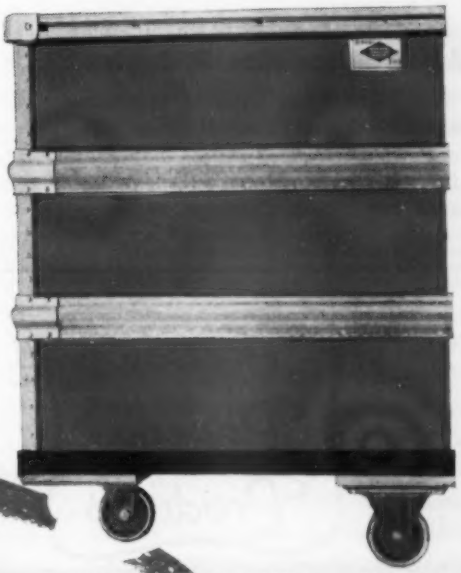
KICK BAND is welded angle iron frame to protect sides of genuine hardwood bottom. A SPARTAN is light on its wheels . . . turns and swivels smoothly!

SPARTAN TRUCKS

You need less manpower, less effort, less time . . . to move materials from one department to another with Spartan trucks. They help increase production and profit! Really tough, the C-D-F Diamond Fibre sides are scuff-proof, last for years without maintenance. Sides stay smooth! They resist moisture, oil and grease! All-metal rim is one piece, channeled for extra strength, eliminates snagging of elbows and materials.

RECEPTACLES

C-D-F receptacles can be furnished in a variety of types, sizes, styles to meet specific requirements. Made from Diamond Vulcanized Fibre, receptacles resist the hard knocks of everyday use; resist water, oil and grease. Smooth-surfaced fibre is bone-hard, does not crack or shatter. There's a lightweight — low cost — C-D-F Fibre receptacle for every industry.



YOUR CHOICE OF CASTERS . . . Shown is a 4" diameter steel wheel, proven best on thousands of mill floors. Ball bearings with lubrication fitting. Close tolerance thread guard of heavy gauge metal keeps wheel spinning, clean and free. Other types of casters available: rubber composition; bakelite; iron; plain or roller bearing; swivel.

C-D-F builds tough, sturdy tote and mill boxes that stack, saving space and effort. Diamond Vulcanized Fibre can be formed and fitted to any size, style.

Special boxes can be made from strong, grease-resistant Diamond Fibre. All work, including lettering, is done in the plant making the fibre. One order does the job.

This C-D-F barrel of Diamond Vulcanized Fibre is light, easy to handle, easy to keep clean. Available with or without casters. Fibre or metal kick bands.

Write for Receptacles Catalog . . . call your C-D-F sales engineer. He's a good man to know!

THE NAME TO REMEMBER... DIAMOND FIBRE RECEPTACLES

CDF

Continental-Diamond Fibre Company

NEWARK 41, DELAWARE

Southwest Conference Slated For Tulsa During September

After a lapse of six years, the Southwest Purchasing Conference of Associations in District 2 of the N.A.P.A. returns to Tulsa, Okla. Headquarters for the conference, which is scheduled for September 23 and 24, is the Mayo Hotel.

A well rounded program, geared to the needs for purchasing development in the widely diversified industrial operations in the area, has been prepared.

Nationally known speakers on purchasing and allied subjects will be on the program. Included in the list are National President, E. F. Andrews and George Renard.

A "Sooner Party" has also been scheduled for the Tulsa Club on the night before the conference opens.

5 New Members Join Purchasing Agents Association Of Dayton

The Purchasing Agents Association of Dayton elected five new members into their group. They are: Edwin L. Bloedow, Purchasing Agent for Black-Clawson Machine Division, Shartle Brothers Co.; Hobart M. Parker, Assistant Purchasing Agent of Black-Clawson; Robert V. Bailey, Purchasing Agent for Lewis Motor Mart Co.; R. Thomas Warner, Purchasing Agent for M. J. Gibbons Supply Co.; and Lloyd W. Wendell, Executive Vice President and Director of Purchasing for Federal Steel Warehouse Corporation.

Reichard Elected President Of Lehigh Valley Ass'n For 1953-54

Carl B. Reichard, Lehigh Engineering Co., was recently elected president of the Purchasing Agents Association of the Lehigh Valley to succeed John J. O'Donnell.

Other new officers for the 1953-54 term are: L. R. Albright, Jr., Albright Son & Co., vice president; K. W. Shook, Victor Balata & Textile Belting Co., secretary-treasurer; and John J. Raub, Nazareth Steel Fabricators, Inc., national director.

Toledo Golfers Have Outing

Highland Meadows was the site of the annual golf party of the Purchasing Agents Association of Toledo. A country-style chicken dinner completed the program.

40 Members of Louisville Ass'n Visit Three Industrial Plants

Forty members of the Purchasing Agents Association of Louisville toured industrial plants in Hardinsburg and Owensboro, Ky., this past July 28th as part of their plant visitation program.

They left Louisville at 8 a.m. by chartered bus and made their first stop at Hardinsburg, where they inspected the compressor station of Texas Gas Transmission Corp. Paul F. Stolpman, purchasing agent for Texas Gas and a PAAL member, directed the buyers through the station and explained how the machinery functions in pumping natural gas through a 26-inch pipeline.

On the outskirts of Owensboro, the PA's bus picked up an escort of three policemen on motorcycles. The buyers first went through the steel fabricating plant of Modern Welding Co. Eugene Stroud, director of purchases for the company and a PAAL director, acted as guide. After the inspection, Modern Welding played host to the PA's at a steak luncheon in the plant cafeteria.

The buyers continued their tour by visiting the electronic tube fac-

(*Please turn to page* 210)

Precision Paper Products

CAN WE SERVE YOU

TUBE SHAPES AT A SAVING TO INDUSTRY

SONOCO makes tubes by the spiral, parallel and drawn processes now in use for:

Protective packaging	Fireworks tubes
Electrical fuse tubes	Warm air ducts
Drug cans	Concrete column forms
Mailing tubes	Thread protectors
Candle tubes	Oil filter tubes
Paper cores	Containers
Linoleum and rug cores	Electric socket liners
Textile paper carriers	Shopping bag handles

*LENGTHS—any length that can be shipped.
*DIAMETERS—⅛" to 36" I.D.
*WALL THICKNESS—from single paper sheet to almost any thickness desired.
*FINISHES—smooth, rough, ground, flocked, colored throughout or wrapped with parchment, cellulose or novelty paper and with inside liners of plastic, glassine, or cellulose. Tubes can be impregnated, perforated and made with metal ends or lacquered tips and printed inside or outside.

Our complete laboratory and engineering service will consider any problem.

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NATIONALLY USED FOR BONDING STOPPER ROD ASSEMBLIES

Stopper Rods being assembled. Note the liberal application of ADAMANT to the Stopper Rod pin.

ADAMANT—Ready-Mixed and easy to use—available in air-tight drums of 100, 250 and 500 lbs. capacity.

ADAMANT Folder and/or list of users' names gladly sent upon request.

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Every foot of RoZone-RoPrene power cable on these reels was corona level tested to assure dependable operation in one of the nation's biggest steel mills. This standard factory testing procedure is one of the big reasons why Rome insulated cables are specified for many critical jobs.

Rome's Corona-Ionization test gives *extra* protection

Specially designed ionization detector for routine factory use measures corona level of all high-voltage rubber insulated cables.

Perhaps you have had the costly experience of installing a reputably high-quality rubber insulated power cable manufactured by a reliable supplier . . . only to have it fail prematurely for apparently no good reason.

Yet, one of the major possible reasons could be . . . internal ionization. This hazard is caused by electrical breakdown of air within the insulation, or especially where it has not been closely fitted to the conductor surface or shield.

Several destructive effects may result from ionization. Included are possible ozone cutting, reduced dielectric strength, and a substantial increase in dielectric losses. *And there is no way of detecting ionization through the visual, physical and routine electrical tests usually applied to cables.*

But you can depend on maximum protection against ionization when you specify Rome power cables. *Every foot of Rome insulated cable, rated at 3000 volts or over, is thoroughly tested by a specially designed ionization detector.* This instrument accurately measures the corona level of the entire cable to assure the ionization voltage exceeds the intended operating voltage of the cable.

This is one more extra step in Rome Cable's standard manufacturing procedure that assures dependability. This completely *NONDESTRUCTIVE* method of testing was developed by Rome Cable engineers and was first described in AIEE paper 48-198, "The Measurement and Investigation of Ionization Level of Rubber Insulated Cables," presented in August, 1948.

Oscilloscope trace indicates ionization within an insulated cable.

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For Everything in Fluorocarbon Plastics

The United States Gasket Company began fabricating Teflon* and Kel-F,† the "wonder" plastics years ago when they were first offered commercially—and has pioneered their application to countless chemical, electrical, electronic, mechanical and nucleonic applications throughout industry.

When you think of Fluorocarbons think of U.S.G. and be sure of the uniform high quality and service you expect of leaders in their field.

United States Gasket Company Fluorocarbon Products Include:

- High temperature, high frequency, high voltage insulating materials (sheets, rods, tubing, tape, cylinders, bars, molded and machined parts) for the electronic and electrical industries.
- Teflon "Alloy" materials that possess most of the pure polymer's characteristics and offer additional desired physical or electrical characteristics. "Alloys" include metals, glass, alnico ceramics, carbon, silicate, mica. graphite, quartz, asbestos, etc.
- Gaskets and packing that are immune to all chemicals (except molten sodium and fluorine). Are non-contaminating. Out-last other materials several times over.
- No-lubricant, non-contaminating bearings and bushings.
- Chemical-proof pump impellers and other machine parts.
- Solderable Teflon and Cementable Teflon.
- Electronic components including miniature tube sockets, crystal sockets, connectors, stand-off insulators, feed-through insulators and terminals, trimmers, etc.
- Perforated Teflon for filtering and sifting chemicals that would attack other filtering media.

*du Pont Trademark
†Trademark M. W. Kellogg Co.

UNITED STATES GASKET COMPANY

FLUOROCARBON PRODUCTS DIVISION
CAMDEN 1, NEW JERSEY
Representatives in Principal Cities Throughout the World

(Continued from page 208)

tory of General Electric Co. The plant employs 5,000 women to man the miniature assembly lines on which the tubes move. The PAAL

Left to right; John B. Eifler, William Johnson, Herman Andres, Herman Krause and Richard Everhart.

members then took a ride through the residential and industrial districts of the city and ended the tour with a visit to the newly opened plant of Green River Steel Corp. just outside of Owensboro. C. L. Whitesel, purchasing agent for

Left to right; Eugene Stroud, Robert S. Burnett, and Henry Layne.

Green River Steel and a PAAL member, directed them through the plant, explaining how high alloy steel is made in the electric furnace and how the steel is rolled.

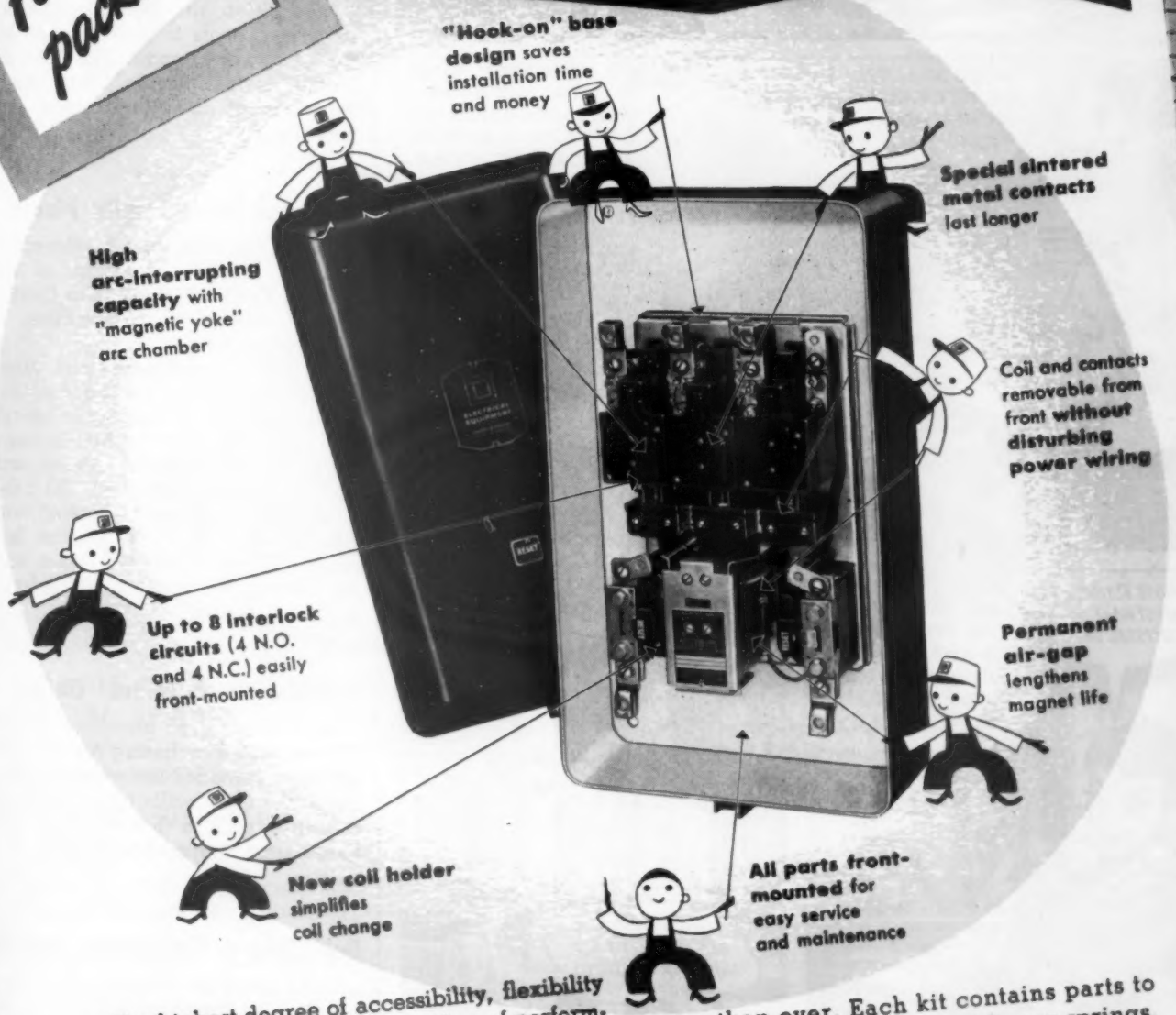
Arrangements for the tour were made by Christian C. Lee, purchasing agent for Norton Memorial Infirmary, Louisville.

700 Attend Syracuse Clambake

Nearly 700 Purchasing Agents and guests made an outstanding success of the annual clambake and summer outing of the Syracuse Association at Hinerwadel's Grove, North Syracuse, N. Y.

NEW Square D Size 4 Starter

Feature-packed!


"Hook-on" base design saves installation time and money
Special sintered metal contacts last longer
High arc-interrupting capacity with "magnetic yoke" arc chamber
Coil and contacts removable from front without disturbing power wiring
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All parts front-mounted for easy service and maintenance

The highest degree of accessibility, flexibility and compactness—with no sacrifice of performance and long life. That's Square D balanced design—and you'll find it in every size Square D starter.

"Off-the-Shelf" Parts Kits, another Square D convenience feature, make normal maintenance easier than ever. Each kit contains parts to replace all load contacts and finger springs. Electrical interlocks also available in kit form.

Write for Bulletin 8536, Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin

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WE WHIPPED THE 4W's THE DAY I PHONED THE TIGERS

Erwin Tuthill, Traffic Mgr., Avon Products, Inc., New York, reports on the famed Flying Tiger Advance Manifest System...

HERE'S THE LATEST TELETYPE ON AVON'S SHIPMENT ABOARD FLIGHT 903!...
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MR. TUTHILL?... FLYING TIGERS. YOUR SHIPMENT LEFT CHICAGO AT 7:57 P.M. IT WILL BE DELIVERED IN L. A. TOMORROW A.M.
THOSE FLYING TIGERS MUST HAVE A CRYSTAL BALL.
THEY KNOW WHERE OUR FREIGHT IS ALL THE WAY...WHAT IT CONTAINS...WHO'S FLYING IT...WHEN IT ARRIVES. THEY'VE SURE WHIPPED OUR 4 W'S!
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PRODUCTS, INC.
ERWIN TUTHILL
WANT TO BUY SOME AVON PRODUCTS, MA'M?
AVON
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PRODUCTS
YOUR TECHNIQUE'S BAD, JOE. LET'S GET THIS SHIP UNLOADED.

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MAIN ROUTE
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Write for free illustrated folder describing Flying Tigers' unique Advance Manifest System.
FLYING TIGERS ... ANOTHER BUSINESS BUILT ON 'CAN DO'
Flying Tiger Line

OFFICES IN PRINCIPAL CITIES • GENERAL OFFICES: LOCKHEED AIR TERMINAL, BURBANK 8, CALIFORNIA • CABLE: FLYTIGER

Washington Agents Hold Golf Outing; Recruit Bowling Team

The Purchasing Agents Association of Washington recently held their Annual Golf Tournament at the Rainier Golf and Country Club. The members and their guests began their rounds of golf at 1 p.m. and then enjoyed a social hour. A steak and fish dinner was served to the group in the evening as a climax to the day's enjoyment.

In addition, the association began its annual drive to recruit members for its bowling teams. The bowling league is one of the most active functions of the Washington Association.

Canton Holds Family Picnic

Lake O'Springs, just northwest of Canton, was the location of the Annual Family Picnic of the Canton and Eastern Ohio Association of Purchasing Agents.

All food, refreshments and utensils were furnished by the Association with Ralph Billingsley in charge of meals and Ron Archibald handling the refreshments. Prizes and novelties were supplied for the youngsters and entertainment was prepared for all. A ball game between the North Canton team and the Canton Squad was a highlight of the day's outing.

Phila. Holds Annual Outing

Several hundred members of the Philadelphia Purchasing Agents Association climaxed their annual outing at the Coatesville Country Club, recently, with a banquet. A golf tournament featured the day's activities.

Golf, Dinner For Canton Agents

The Canton and Eastern Ohio Association of Purchasing Agents recently held their annual golf outing at the Shady Hollow Country Club. A dinner in the evening rounded out the day's activities.

Western Mass. Holds Clambake

Softball, horseshoes, darts, keg throwing, and egg tossing were featured on the afternoon program of an old-fashioned clambake sponsored by the Purchasing Agents Association of Western Massachusetts at Turner Park in East Longmeadow, Mass.

La Salle MANUFACTURES QUALITY

COLD FINISHED STEEL BARS . . .

ROUNDS, FLATS, SQUARES, HEXAGONS, SPECIAL SHAPES LaSalle offers a complete range of cold-finished steel bars in popular sizes, shapes, and lengths. Also, special shapes to order.

COLD-DRAWN—TURNED AND POLISHED —GROUND AND POLISHED Modern drawing, turning, and grinding equipment, and skilled workmanship insure quality steel bars in standard grades.

CARBON AND ALLOY STEELS LaSalle manufactures quality cold-finished bars in AISI and SAE carbon and alloy steel grades.

FREE-MACHINING STEELS LaSalle *specializes* in free-machining steels for economical production of your parts . . . Bessemer, open-hearth, and several types of leaded steels.

FURNACE-TREATED STEELS LaSalle's furnace treatment develops elevated physical properties through quenching and tempering, and stress relieving. Careful annealing improves machinability.

SPECIAL STEELS Aggressive engineering research makes LaSalle a leader in specialty steels . . . with such developments as STRESSPROOF, LA-LED, and Super LA-LED.

Send for "The Story of Cold-Finished Steel Bars . . . from Ore to Finished Product"

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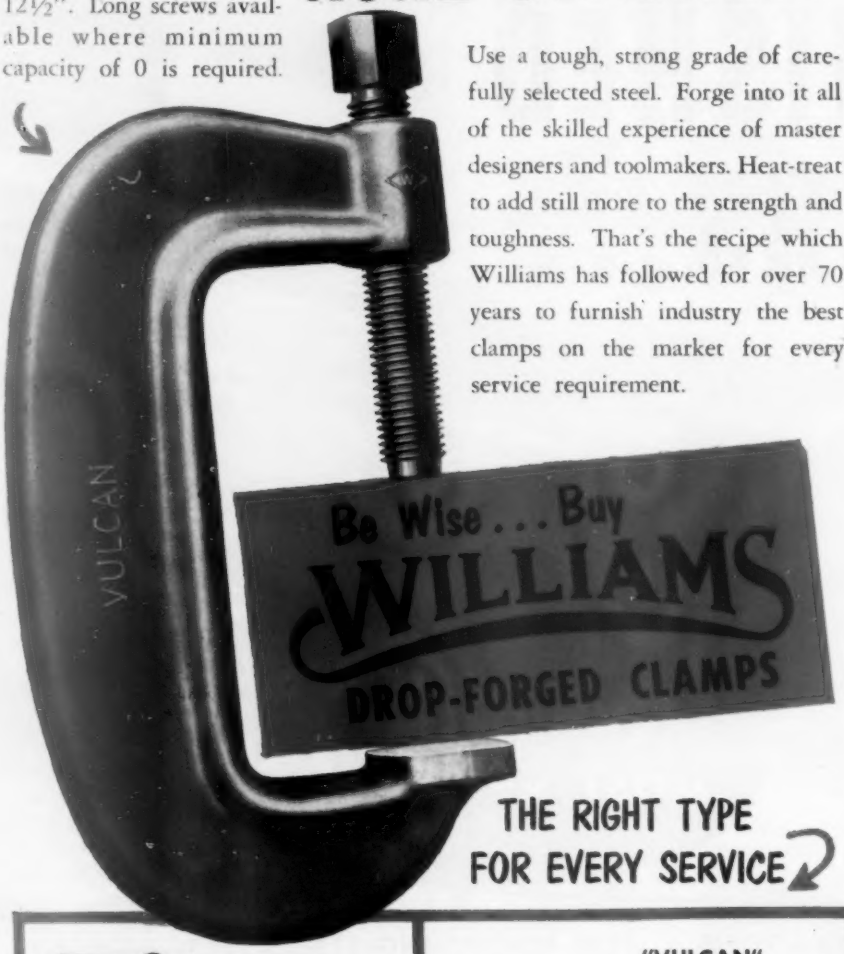
"Vulcan" Heavy Service in 11 sizes with maximum capacities from ¾" to 12½". Long screws available where minimum capacity of 0 is required.

NONE STRONGER

Use a tough, strong grade of carefully selected steel. Forge into it all of the skilled experience of master designers and toolmakers. Heat-treat to add still more to the strength and toughness. That's the recipe which Williams has followed for over 70 years to furnish industry the best clamps on the market for every service requirement.



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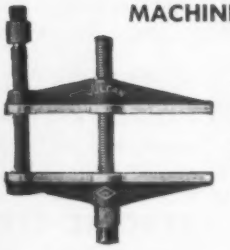
"AGRIPPA" GENERAL SERVICE

in 9 sizes with maximum capacities from 2" to 18". Drop-forged swivel and screws have slide pin handle.



"VULCAN" MACHINIST'S CLAMPS

in 4 sizes with maximum capacities from 1¼" to 4¼". Jaws remain parallel.

"VULCAN" TOOLMAKERS'

in 4 sizes each of 2 types. Plain screw 1" to 4¼"; swivel screw ¾" to 4". All screws with wings to permit use of lever in tightening.

DEEP THROAT

in 7 sizes with maximum capacities from 2" to 12". Special threaded screws for rapid adjusting. Also in cadmium plate finish to resist welding spatter.

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Williams Tools are sold through your local Industrial Distributor who can supply your needs.

Buffalo Association Holds Golf Party And 21st Annual Picnic

The Purchasing Agents Association of Buffalo recently held its golf party and, shortly thereafter, its 21st Annual Picnic. The golf party was held at the Cherry Hill Club, Ridgway, Ontario, while the P.A.'s and their families gathered at the Automobile Club of Buffalo in Clarence, for the picnic. Highlight of the picnic was a baseball game between the P.A.'s and salesmen. A baked ham dinner and dancing topped off the day's entertainment and fun.

Materials Handling "Clinic" Set for Boston in October

The second in a series of "traveling clinics" on material handling sponsored by the Material Handling Institute will meet in Boston on October 2. The conference, scheduled at the Sheraton-Plaza Hotel, will be held in cooperation with the New England chapter of the American Material Handling Society.

Purpose of the clinic is to develop among users a better understanding of the correct application of material handling equipment to industry's most pressing problems. It will be divided into five separate panel discussions, covering the entire day. Each discussion will cover general types of problems, such as receiving and shipping problems, and multi-storied building problems.

Eighth Instrument Exhibit to Be Held in Chicago

Outstanding scientists and technical specialists from government, educational, and industrial organizations will address the delegates to the Eighth National Instrument Conference and Exhibit to be held September 21-25 at the Morrison and Sherman Hotels in Chicago.

The conference, sponsored by the Instrument Society of America, will include the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Scientific Apparatus Makers Association.

Virtually every subject and scientific project wherein instrumentation is making better things for people and eliminating repetitive drudgery, will be detailed by the list of more than 100 speakers.

STOP COSTLY PIPE-LINE FAILURES

No one knows better than you the increasingly high cost of unscheduled outages due to pipe-joint failures. But do you know just how far it is possible to go toward *eliminating* such failures throughout the life of your piping systems? The answer to this critical problem in production and maintenance costs is FORGED STEEL FITTINGS by the pioneer firm of Watson-Stillman—consultants and suppliers to *all* major industries concerned with pipe joining and maintenance.

Watson-Stillman fittings are FORGED for maximum strength, toughness, and resistance to corrosion, vibration, and shock. More uniformly precise in all dimensions, they are the modern go-between wherever pipes meet permanently.

Leading Refineries, Chemical Plants, Public Utilities, Refrigeration and Industrial Plants throughout the world stay on stream at lowest cost-per-year with the famous Double-Diamond Fittings by Watson-Stillman. Write for literature.

Screw-End and Socket-Weld Types
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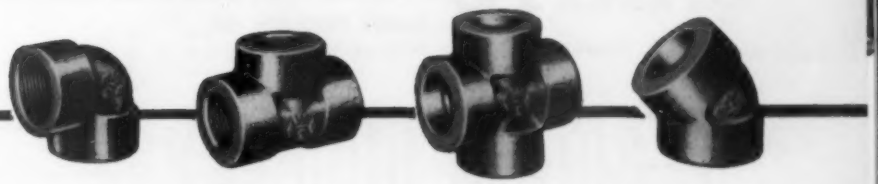

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How to apply better zinc phosphate coatings to steel in preparation for painting
how to STRIP PAINT
8 things to look for when you wash metal by machine
how to use Oakite Soluble Oil
How to use Oakite Solvent Detergents for removing
5 preparing aluminum for spot welding
Some good things to know about Metal Cleaning

What you should know about your cleaning problems

Maybe your production's rolling merrily along, with never a hitch. Then again, maybe it isn't.

Maybe you've run into a snag, because of a new process, even a new product; and the cleaning is the critical operation. Maybe the aluminum sheets that used to be riveted are now being welded; maybe the part you used to plate you're now painting; maybe you've switched from civilian to military production, with its more exact specifications.

When this happens to you, you want the answers—fast. That's why we've prepared the booklets you see above—to tell you what you should know about your cleaning problems. They're edited to help you speed production, cut rejects, prolong equipment life, cut cleaning time and costs.

In these booklets you'll find all the experience of the more than 200 Oakite Technical Service Representatives who spend their days by the cleaning tank and the washing machine, checking constantly to make sure that you get the most for your cleaning dollar.

In a word, this is *your* reference library on production cleaning. It's yours for the asking. If you don't have your copies, ask your Oakite man. Or use the coupon.

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Commerce Department Sets New Arrangement for Cooperation of Government and Industry

An arrangement which will give the nation's businessmen the benefit of the broad experience and talent of outstanding business leaders in advising measures to maintain the current record prosperity, has been completed with a streamlined organization of the Department of Commerce. Sinclair Weeks, Secretary of Commerce, recently revealed the plan in an address before the National Sales Executives.

The organization, which can best be described as a business service agency, continues the remaining necessary functions of the department's National Production Authority, such as allocations related to defense and atomic energy, and establishes approximately 20 main industry divisions with key advisors. The divisions' advisors are recommended by the various industries and industrial experts, from the career service, are assigned as an operational staff.

"The new unit will be coordinated with regular agencies of the department so that not only will government have access to top level business counsel, but each segment of industry will have its own special division for receiving government information and service," Mr. Weeks explained. "'Thus, this network adapts and improves some of the features of the NPA Industry Advisory Committees."

As detailed, the plan calls for the setting-up of major divisions for iron and steel, chemicals, electronics, forest products, consumer durables, etc. Various other industries will have their own special sub-divisions under the overall set-up.

"The chairman of each commodity division will be an outstanding industrialist recommended by his industry and serving full time, without pay, on a six-months rotating basis. He will be assisted by a capable deputy from the Federal career service.

"Members of the advisory committees will also be leaders in their field and experts from the Civil Service system will carry out the required operations in each division."

Two points which the new business service agency will handle will be the continuation of directives and allocations of materials for defense and atomic energy as well as to

(*Please turn to page* 224)

RHEEMCOTE POSTER DRUMS

help Sherwin-Williams cover the earth

Sherwin-Williams, one of the best known names in the paint industry, is shipping S-W paints in colorful Rheemcote lithographed 55-gallon drums, to make the company name and trade-mark even better known.

Rheemcote containers can be lithographed in any number of colors, any design, including halftones. The high-gloss finish is tough, long-lasting. When necessary, interiors can be roller-coated with special protective lacquers.

If your product is shipped in steel containers, let Rheem show you the way to added prestige and profit . . . with Rheemcote Poster Drums.

Write for free colorful booklet on this powerful new advertising medium. Rheem Manufacturing Company, 4361 Firestone Boulevard, South Gate, California.

Sell as you ship with **Rheemcote drums**

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RHEEM MANUFACTURING COMPANY • ***Manufacturing Plants in 22 Cities Around the World***

PLANTS AND OFFICES: BURLINGTON, LINDEN, NEW JERSEY • CHICAGO, ILL. • HOUSTON, TEXAS • NEW ORLEANS, LA. • NEW YORK, N. Y. NEWARK, RICHMOND, SAN FRANCISCO, SAN PABLO, SOUTH GATE, CALIF. • SPARROWS POINT, MD • FOREIGN PLANTS: BRISBANE, FREMANTLE MELBOURNE, SYDNEY, AUSTRALIA • BRISTOL, UNITED KINGDOM • BUENOS AIRES, ARGENTINA • HAMILTON, ONTARIO • LIMA, PERU RIO DE JANEIRO, BRAZIL • MILAN, ITALY • SINGAPORE

SEND YOUR CHRISTMAS GIFT FROM FRANCE

4 EXQUISITE CRYSTAL BRANDY SNIFTERS at only $1.15 per set

Through special arrangements by the makers of famous Hennessy Cognac Brandy, a limited supply of these crystal brandy snifters awaits you in France. Here is all you have to do to send your customers and friends an unusual gift direct from France.

1. Fill out the coupon below with *your own* name and address.
2. Attach a list of the names and addresses to whom you want glasses sent. (Duty restrictions prevent our sending all sets to you.)
3. Attach check or money order at $1.15 per set made out to HENNESSY and mail by *Oct. 15th.*

This is how your order will be handled:

1. From New York, a gift card will be sent in your name to each recipient.
2. From Cognac, France, glasses will be sent to arrive for Christmas.

P.S. A bottle of Hennessy makes an ideal gift *for the top names* on your list. Consult your local package store about Hennessy Cognacs in a wide range of prices—all attractively gift packaged.

★ ★ ★

HENNESSY

The World's Preferred Cognac Brandy

84 Proof • Schieffelin & Co., New York

28J

Hennessy, P.O. Box 409, New York 46, N. Y.

Here is my order for_____sets of Hennessy Brandy Snifters @ $1.15 each to be sent to the attached list. My check for_____ made out to Hennessy, is enclosed.

My Name_____

Address_____

City_____ Zone____ State_____

Note: This order must be mailed not later than Oct. 15, 1953, to insure Christmas delivery.

(*Continued from page 222*)

service the respective industries with specific information.

Under the latter point, Mr. Weeks said;

"Today a businessman with a problem often is puzzled as to the proper Federal agency to contact. Under the new plan he would contact his industry division and be offered the facilities of the Commerce Department or be directed to the appropriate agency in some other department of the government."

Additionally, the program will help to secure the cooperation of all industries in a mobilization base and post-attack program.

"It is planned to conduct this phase of defense so that, wherever possible, industries themselves will obtain required data for the government, thus eliminating some of the confusing, harassing and laborious reporting procedures of the past," he pointed out.

Another objective of the plan aims to keep up-to-date industry organization plans for crisis, so that operating procedures and the nucleus of an operating agency will be ready for immediate use in the event of general war or grave emergency.

★ ★ ★

Publish New Edition of Canadian Trade Index

A new edition of a trade index giving the essential details of some ten thousand manufacturing firms in Canada as well as a classified directory of many thousands of manufactured products listing the firms making them, has been released by the Canadian Manufacturers' Association, 67 Yonge Street, Toronto, Ontario.

The 1170 pages of the 1953 Canadian Trade Index covers made-in-Canada products ranging from camera lenses to steel powder and pentaerythritol. The book is available for $7.50 per copy.

★ ★ ★

Chicago Industrial Directory

A directory containing the names of 35,000 officers and managerial personnel in the 12,000 industrial and manufacturing plants located in Chicago and Cook County, has been published by the Chicago (Cook County) Industrial Directory, Inc.

The 1953-54 Directory shows whether a company is a parent or subsidiary and describes its principal activity, product made, plant size, number of employees, and territorial nature of the business.

We Coverall Industry with:

RENTAL SERVICES:

- **INDUSTRIAL WORK GARMENTS**
  - Coveralls
  - Shirts and Pants
  - Shop Coats
- **WOMEN'S WORK FASHIONS**
- **SPECIALTY CLOTHING**
  - Flame-Proof
  - Acid-Resistant
  - Water-Repellant
- **GLOVE SALVAGE**
- **PERSONAL PROTECTIVE EQUIPMENT SALVAGE**
  - Chrome Leather Aprons, Gloves
- **IMPREGNATED DUST CLOTHS**
- **SHOP TOWEL RENTAL SERVICE**

For these and other modern services contact the nearest certified, accredited member of the Institute of Industrial Launderers.

Do you have a special industrial laundering problem? The Institute's free counseling service will be glad to help. Write the:

INSTITUTE of INDUSTRIAL *Launderers*

1627 K STREET, N. W.

WASHINGTON 6, D. C.

NOW--

Cool Heads for your SALAD BOWL

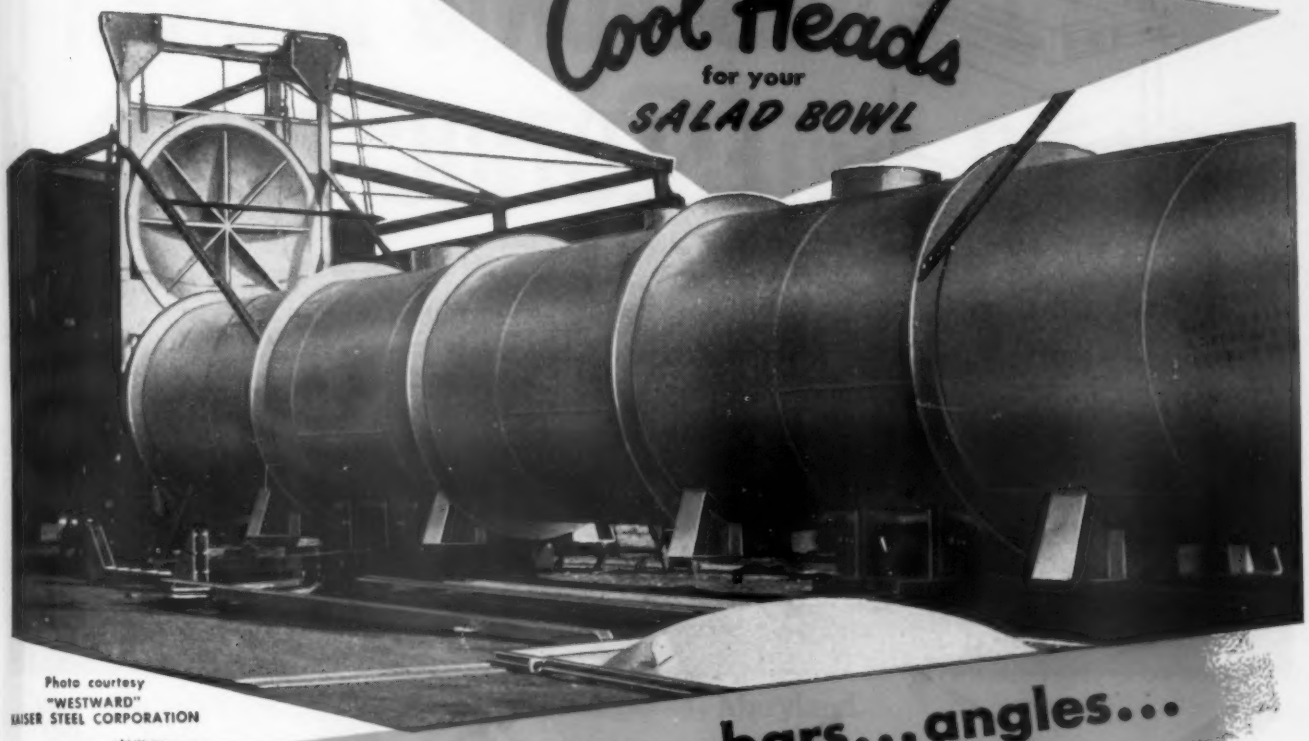

Photo courtesy "WESTWARD" KAISER STEEL CORPORATION

...flame cut plates...bars...angles...

supplied by CASTLE

HEAD LETTUCE KEEPS FRESH--when shipped from Salinas, California...to markets all over the country...even to New York City--and arrives as crisp as the day it was cut. Such remarkable results are now obtained by pre-cooling crated lettuce in the huge vacuum tube unit developed by Vacuum Cooling Company and built by Saracco Tank & Welding Co., both of San Francisco. A. M. Castle & Co. welcomed the opportunity to be a factor in the production of this outstanding unit.

STEEL FOR EVERY PURPOSE--is supplied by Castle to meet the requirements of thousands of large and small producers of an almost endless variety of products. And, for over 61 years Castle has persisted in giving fast, friendly, cooperative attention to every customer--on each and every order, regardless of its size.

FOR EVERYTHING IN STEEL--whatever you need, whatever the quantity--why not phone A. M. Castle & Co. today? With nine large, heavily stocked, completely equipped warehouses--you can be sure of speedy service from Castle on every call.

CASTLE STEEL DISTRIBUTORS

EVERYTHING IN STEEL

COLD FINISHED BARS • STAINLESS STEELS • HOT ROLLED BARS • TOOL STEELS • ALLOY STEELS • SHEETS PLATES • STRUCTURAL and many others in a large variety of sizes, grades, and finishes--for immediate delivery.

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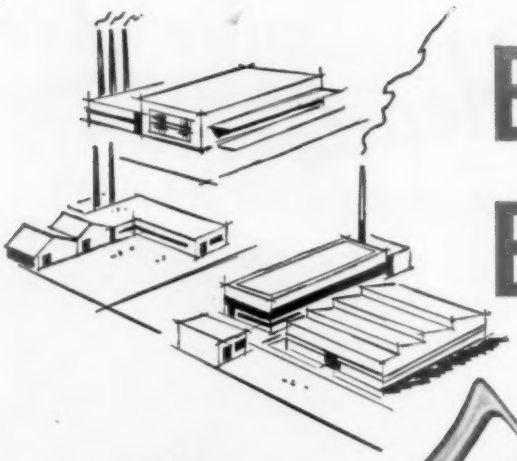
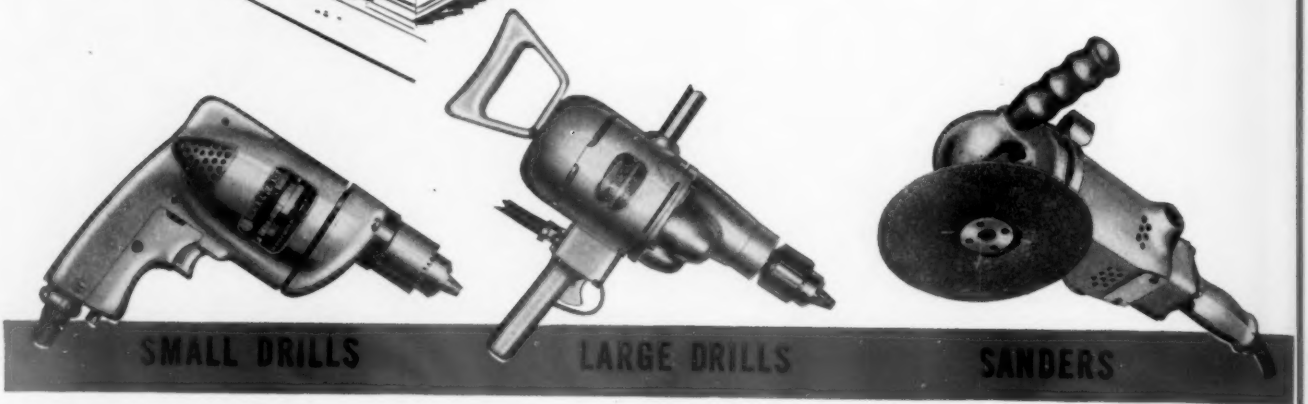
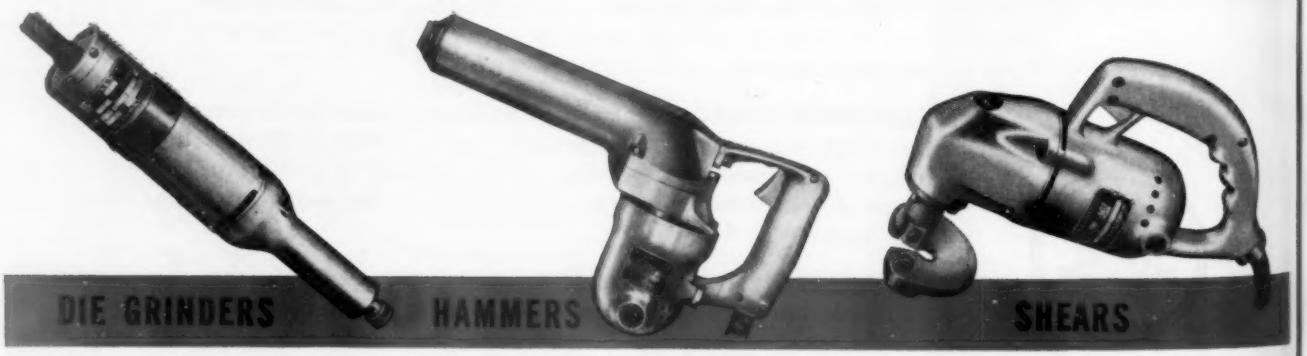
BALTIMORE • CHICAGO • MILWAUKEE • ROCKFORD • KANSAS CITY • SEATTLE • SAN FRANCISCO • BERKELEY • LOS ANGELES



BLACK & DECKER ELECTRIC TOOLS





Speed Up Production Slow Down Rising Costs

ASK a production expert, a contractor, a service or maintenance man how to speed up jobs and at the same time cut costs. Chances are he'll say, "Put a Black & Decker Electric Tool on the job."

And there's good reason why Black & Decker rates so high with industry, coast to coast.

Black & Decker is known for the quality that's built into every B&D Tool—the top-flight parts, the husky housings, the compact designs. The versatility, the stamina. Users *know* that B&D Tools speed their operations—saving time, money, manpower, and back-breaking work.

So put Black & Decker Tools on *every* job. It's one sure way to build up your production and hold down costs. For additional information and free catalog, write to: THE BLACK & DECKER MFG. Co., 607 Pennsylvania Ave., Towson 4, Maryland.

Check these Outstanding Features

✓ **WORLD'S MOST COMPLETE LINE**—More kinds of tools . . . greater choice of capacities, speeds, power, and price in most groups to fit your exact requirements.

✓ **ENGINEERING KNOW-HOW**—More than 43 years of leadership in engineering and manufacturing provide the skill and experience that give you the best in modern electric tool improvement.

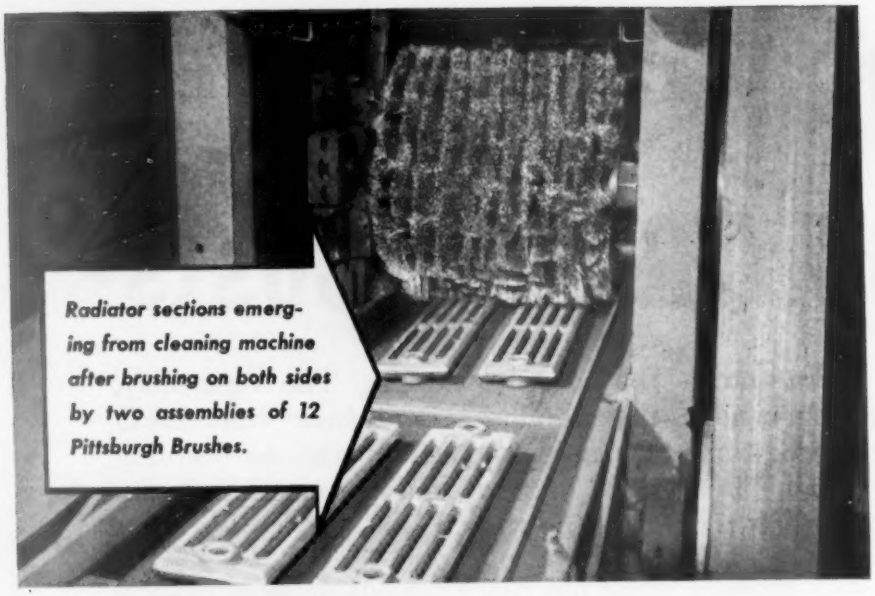
✓ **SERVICE BRANCHES**—35 factory-owned-and-operated Sales and Service Branches (within 24 hours distance) give you assurance of quick, competent service to keep tools in top condition.

✓ **B&D TOOL SPECIALISTS**—An experienced, fully trained sales organization, familiar with tool applications, to advise and assist you with your specific, tough tooling problems.

✓ **CONVENIENT SOURCES OF SUPPLY**—Leading distributors everywhere stock B&D tools and are ready to give you immediate service. Consult your classified telephone directory under "TOOLS-Electric" for nearest distributor.

LEADING DISTRIBUTORS EVERYWHERE SELL

B&D Black & Decker PORTABLE ELECTRIC TOOLS



Radiator sections emerging from cleaning machine after brushing on both sides by two assemblies of 12 Pittsburgh Brushes.

Pittsburgh Brushes help you solve problems like these—

Cleaning Narrow Spaces—National Radiator Company, Johnstown, Pa., cleans 30,000 radiator sections a week! To insure a perfect final finish, even the narrowest spaces must be absolutely clean prior to assembly. Pittsburgh engineers were presented with the problem of designing a brush that would reach these spaces and would fit National's existing machine. Successful? National reports: Pittsburgh Brushes "do a better job of cleaning and are more economical."

Preparing Chills—At Continental Foundry & Machine Co., East Chicago, Indiana, chills used to cast iron rolls must be cleaned of the oxydized metal remaining from previous usage, as well as dirt and grease accumulated in storage. After experimenting with other brushes, Continental settled on Pittsburgh Brushes because they "do the job better and stand up longer than any others previously used."

Improving Original Equipment—The Sommer and Maca Glass Machinery Co., Chicago, Illinois, uses Pittsburgh Brushes in the automatic washing machines they manufacture. Brushes formerly used simply didn't have the over-all density pattern needed. Pittsburgh engineers studied the problem and designed a brush which Sommer and Maca approved "because of (its) denser bristle pattern and lower cost."

WRITE TODAY FOR FREE BOOKLET!

Write for a free copy of our booklet that shows, through actual case histories, how Pittsburgh can help *cut your* brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, *Brush Div.*, Dept. W-2, 3221 Frederick Ave., Baltimore 29, Md.

PITTSBURGH *Power Driven* **BRUSHES**

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Conference Board Head Offers View on Avoiding Depression

Place principle ahead of expediency, utilize judgment and ingenuity to moderate any temporary dislocations, and manifest confidence in the future growth of the American economy.

That's the formula proposed by John S. Sinclair, new president of the National Industrial Conference Board, to guide business in its efforts to maintain a sound economy. In the 37th annual report of the conference board, just released, Mr. Sinclair emphasizes the following specific actions or "mechanics" that industry might follow to avoid the recurrence of a serious depression:

"The reputation of business as a good citizen should be zealously guarded. Industry can earn and hold the confidence of all the public with which it comes in contact—agriculture, consumers, government, labor and such important molders of public opinion as the press, teachers, and clergymen.

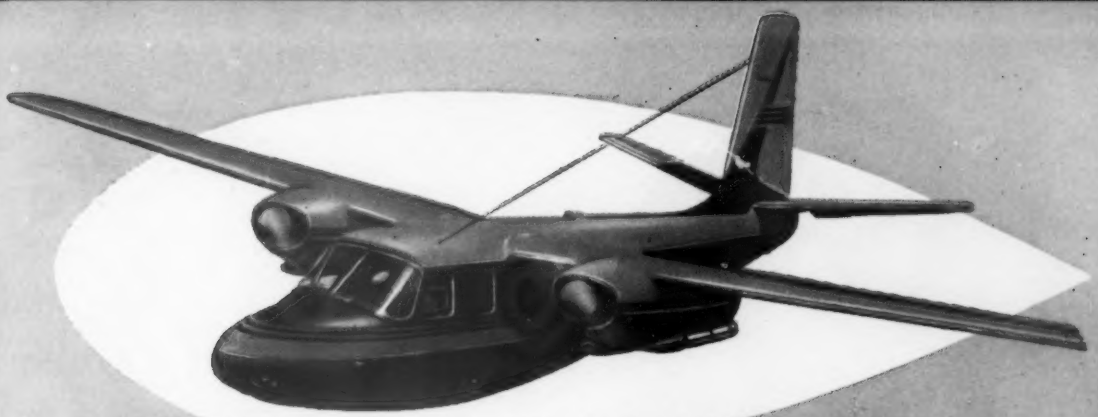
"Industry can do its part in a real effort toward greater understanding and more teamwork among management, labor and government if we are to make the most of our resources—material and human. Business interests cannot afford to adopt an attitude of hostility toward the exercise of the proper functions by either of these two partners in our economy.

"Unremitting, systematic and intensive planning can be undertaken for the future, both over the intermediate term and over the long term. More and more companies are recognizing that through such planning they may lessen the depressing effects of any short-range maladjustments that may occur, and are already setting their sights on the position that they expect to occupy ten years hence.

"Continued research, both in the physical and social sciences, and continued sharing of the results of that research can extend industry's horizons farther and farther. Industry can produce with ever-increasing efficiency. There is every indication that, largely through research already accomplished, it stands today on the threshold of tremendous technological gains which should increase productivity and continue to advance the American standard of living. These gains are being shared throughout all industry to a greater extent than ever before.

"Industry can constantly work

(*Please turn to page* 232)



Aero-Commander. Seats 6. Powered by two 260-h.p. Lycoming air-cooled, geared engines.

Grumman Widgeon Conversion. Amphibious flying "office" featuring 260-h.p. air-cooled, geared engines by Lycoming.

Safest "offices" over earth

You are now looking at the "wings" carrying America into a great new era of safe, economical executive transportation. Each of these twin-engine, multi-passenger planes is powered by Lycoming . . . long a leader in the up-to-500-h.p. engine field. Each has the double dependability of *two* air-cooled Lycoming engines—so powerful that the planes can safely fly and land with a full load *on one engine alone.*

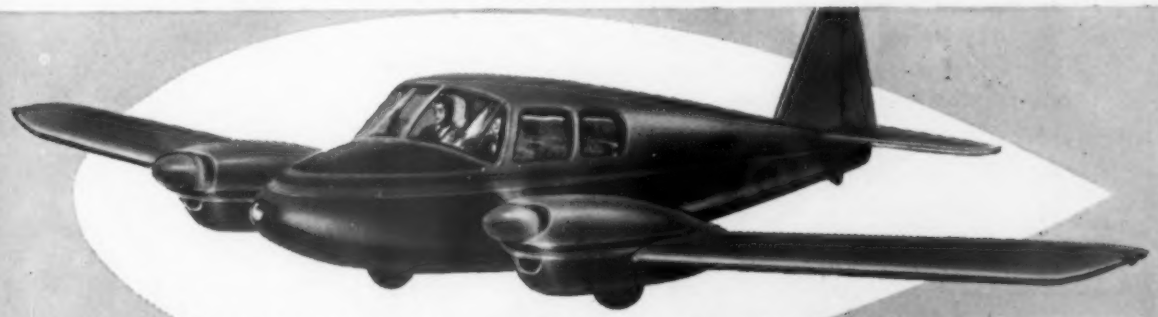
To fly any time, any place . . . these are the safest "offices" *over* earth . . . the soundest investments in executive aircraft *on* earth. *For further information, write us on your letterhead.*

FOR RESEARCH · FOR PRECISION PRODUCTION

LOOK TO **LYCOMING**

Lycoming-Spencer Division, Williamsport, Pa. AVCO Bridgeport-Lycoming Division, Stratford, Conn.

Air-Cooled Engines for Aircraft and Industrial Uses. Precision-and-Volume Machine Parts. Gray-Iron Castings. Steel-Plate Fabrication



Piper Apache. Seats 4. Dependably powered by two 150-h.p. air-cooled Lycoming engines.

Riley Twin Navion Conversion. 4-place executive plane powered by two 150-h.p. air-cooled Lycoming engines.

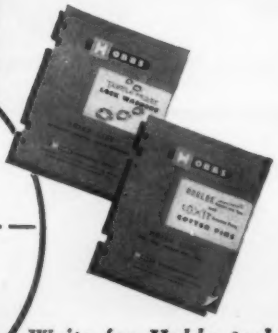
You can *depend* on Hobbs spring lock washers to meet all job requirements and government specifications. High in quality—low in cost, these fasteners are available in high carbon steel, stainless steels, silicon and phosphor bronze, and all types of platings. Their "tangle-proof" construction speeds production. Warehouses throughout the U. S. assure prompt delivery of your regular and emergency needs.

HOBBS MANUFACTURING CO., Fastener Division
10 Salisbury St., Worcester 5, Mass.

HOBBS HOBLOK & LOXIT Cotter Pins

HOBLOK (Hammer-Lock Type)
cotter pins lock securely when head is hit with hammer. No bending of prongs required. Saves time and reduces costs!

LOXIT (Extended-Prong)
cotter pins meet all government specifications. Both types of Hobbs cotter pins are available in steel, brass, stainless steel, and monel.



Write for Hobbs lock washer and cotter pin price lists today!

(*Continued from page 228*)

toward increasing the efficiency of its distributive system through use of the same methods that have made the American productive machine the wonder of the world.

"All of us are well aware of the obstacles that have arisen in the field of foreign investments in many areas, and it is imperative that American businessmen and the American government work toward the removal of these barriers and toward a reopening of foreign trade and an expansion of markets that will be beneficial not only to ourselves but to all of the free nations of the world."

Pre-Truce Income Figures Show Continued Rise

Personal income in June was at an annual rate of $286 billion, or $1 billion higher than in May, according to latest figures of the Office of Business Economics, U.S. Department of Commerce. For the first half of 1953 as a whole, the annual rate was $283 billion, 7% higher than in the corresponding period of last year.

The May-June increase in personal income reflected the continued advance of nonagricultural income, which comprises over 90% of the personal income total. Virtually all major types of nonfarm income showed small gains over the previous month. Farm income was slightly lower than in May.

Private wages and salaries contributed the bulk of the May-June rise in personal income, advancing $1 billion to an annual rate of $165½ billion. A rise in factory payrolls reflected higher employment in the durable-goods industries, particularly in auto and ordnance plants.

Since the close of 1952, private wages and salaries have advanced by $6, or almost 4%, under the impetus of continued advances in both employment and wage rates.

Chrysler Offers Two 16MM Films

The Chrysler Corporation, through the Modern Talking Picture Service, Inc., New York City, is offering two motion pictures for showing before interested groups. Both films are 16mm sound films in color. One concerns one of America's latest weapons, the Patton 48 tank, and the other is documentary type film of Pacific Islands of World War II.

Unsurpassed-anywhere!

IT ALL COMES DOWN to one fact... that you can always count on Roebling high carbon flat spring steel to reduce preparation time, machine stoppages and rejects to a minimum. What's more, it's made as you want it... annealed, hard rolled untempered; scaleless tempered; tempered and polished, blued or strawed.

You *pay* for the best every time you buy flat spring steel. Make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

California giant Sequoias—largest of all trees.

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

PHOTO BY W. C. MANNS

At last!

A BUSINESS GIFT

that's really different

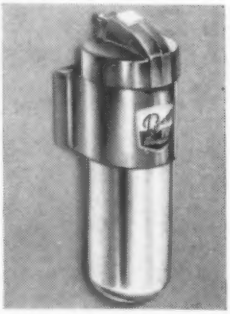
Pyrene's

REG US PAT OFF

new push-button home and car fire extinguisher

If you've been looking for a business gift that's different and sure to be appreciated, look no further. Nothing like this new Pyrene push-button fire extinguisher has ever been given before. Yet there couldn't be an item more needed or wanted. We guarantee that it will please any customer, any friend you have in mind.

This brand-new precision-made Pyrene* has already been named Grand Prize Winner of this year's National Home Safety Awards. Here's why: just press the button and instantly you get a steady 20 foot stream of fast-acting, nondamaging extinguisher liquid. Release the button—the stream stops. It kills gasoline, oil, grease fires (water won't). It's safe on electrical fires (water isn't). And it's effective on all small paper, wood and cloth fires. This Pyrene is easy to recharge, too—at a gasoline station air hose. Give it as your firm's gift this year.



Comes filled, complete with wall bracket for easy mounting

These new Pyrenes are offered in quantity at attractive prices. They are shipped in smart gift packages. On orders of 120 or more, we will label the extinguishers with the donor's name. Get your order in soon. Contact your Pyrene distributor or write us.

*T. M. Reg. U. S. Pat. Off.

Pyrene FIRE EXTINGUISHERS

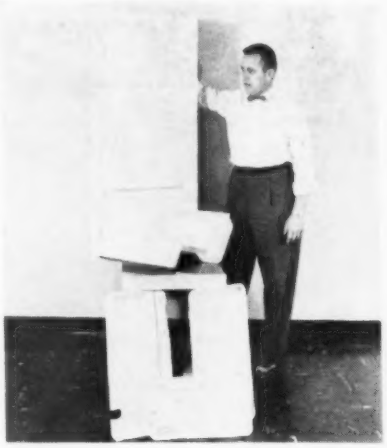
PYRENE MANUFACTURING COMPANY

578 Belmont Ave. Newark 8, New Jersey

Affiliated with C-O-Two Fire Equipment Co.

New Rigid Plastic Sheet Has Many Industrial Applications

A new kind of rigid plastic sheet material, with unusual properties and excellent low-cost forming characteristics, has been announced by the Campco Division, Chicago Molded Products Corporation.



Refrigeration industry finds rigid sheets ideal for vacuum-forming various parts.

The material—Campco S-300—is a copolymer of polystyrene and rubber extruded through specially designed continuous equipment to produce, in a single operation, a material having a smooth surface and a high gloss finish. It can be supplied in any desired length in widths ranging from 26 to 58 inches, and in thicknesses ranging from 0.005 to 0.125 inches. Color range is unlimited.

The combination of styrene and rubber produces a sheet that has high impact strength without sacrifice of formability. In addition, the sheet machines easily, and is dimensionally stable since its water absorption is low. Forming is simple, no heavy presses, machines, or expensive dies are required. Low cost wooden, sprayed metal, or reinforced plaster dies give optimum results. The sheet is usually heated to a predetermined temperature, then snapped into final shape by applying vacuum through a low cost die. Even the minutest detail in the mold can be reproduced.

According to Edward Bachner, vice-president in charge of the Division, Campco S-300 can compete in many applications with conventional sheet steel, aluminum, wood, paperboard, fiberboard, glass, injection-molded plastics, and can even replace fabric in applications where the fabric serves as a liner (car-roof interiors, for example). Its use would, of course, be governed by

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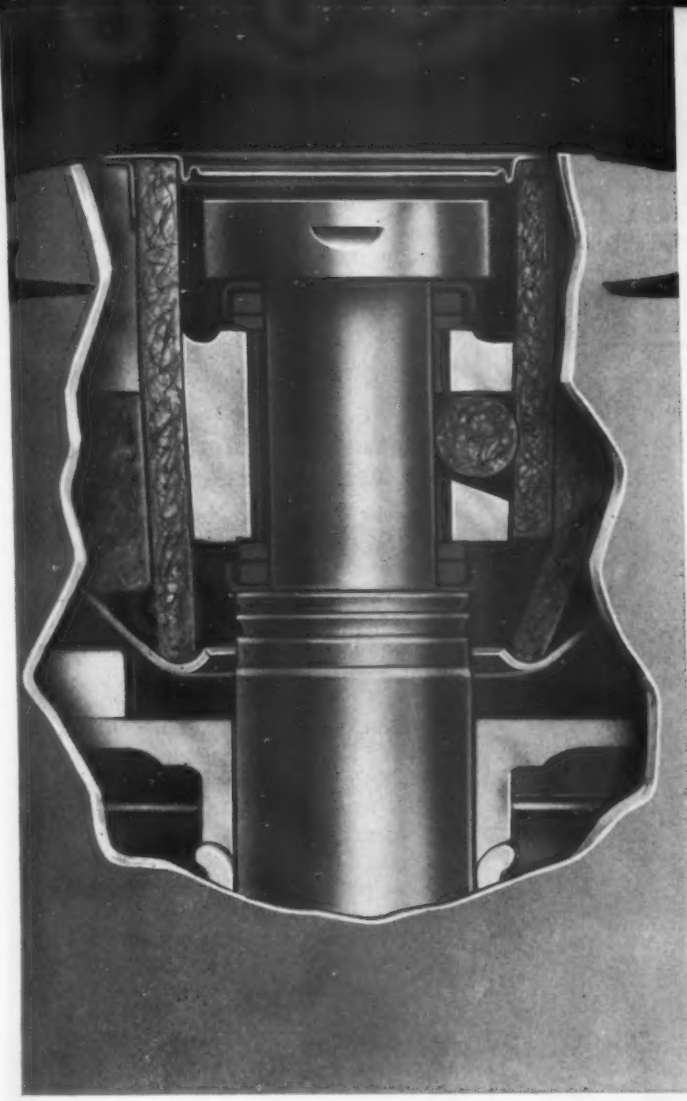
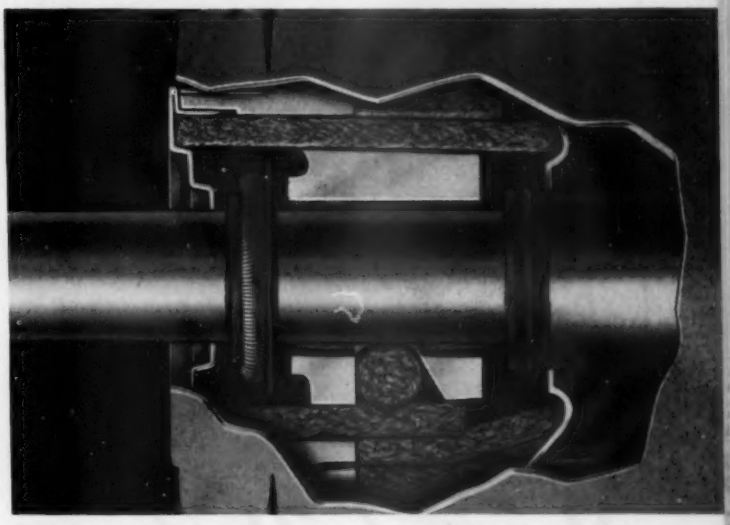


LOCKED-IN THRUST WASHER ASSEMBLY makes it possible for this G-E motor to handle moderate-thrust loads in any direction.

THREE LUBRICATING WICKS evenly lubricate the shaft by picking up the oil and retaining it for redistribution to the shaft.



SHAFT OIL THROWERS instantly return the oil to wicking while spring loaded thrower prevents loss of oil along the shaft.

Fhp motor in any position

SMALLER . . .

LIGHTER . . .

BETTER LOOKING . . .

Got a moving problem?

Fond farewells—

are *certain*, when AMERICAN RED BALL moving specialists transfer home, office furnishings *safely!* Yet—the COST IS LOWER THAN MOST! Consult the yellow pages of your 'phone directory for your nearest AMERICAN RED BALL agent! FREE PERSONALIZED ESTIMATE!

AMERICAN RED BALL TRANSIT COMPANY, INC.

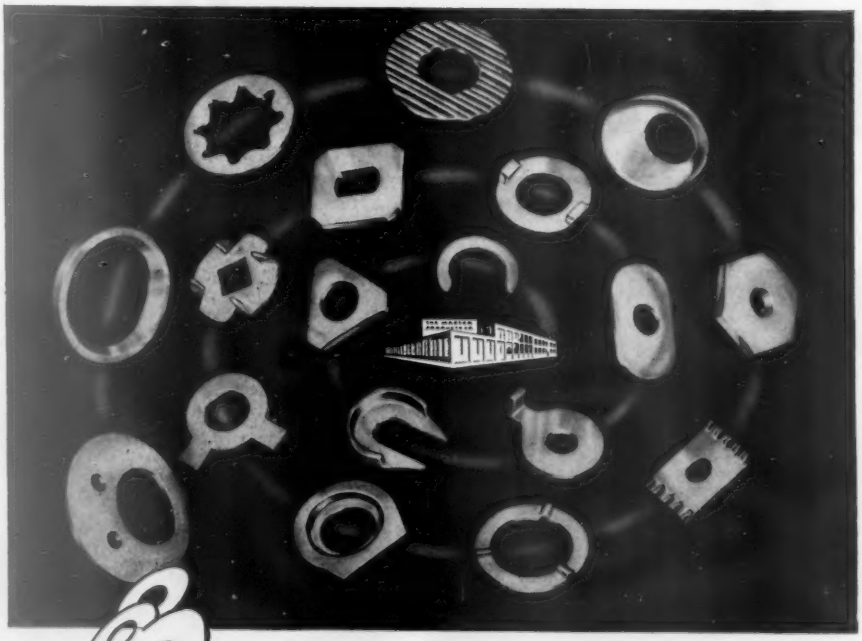
Rely on AMERICAN RED BALL

TRANSIT COMPANY INC

PIONEER NATION-WIDE MOVERS

Special Washers { ANY METAL / ANY SIZE / ANY QUANTITY

OVER 15,000 SETS OF TOOLS AT YOUR DISPOSAL



THE *Master Products* CO.

6400 PARK AVENUE • Diamond 1-1740 • CLEVELAND 5, OHIO

(*Continued from page* 234)

sound engineering and production reasons: it could only serve light structural purposes, yet for formed parts like door liners, it can easily justify its selection because of its built-in glossy finish and color, insulating value, high impact strength, ease of cleaning and handling, plus its obvious production advantages.

Compound Cuts Wear and Tear on Machine Friction Surfaces

Losses due to wear and tear on friction surfaces of many types of machines can be sharply reduced with a new compound that incorporates an alloy of copper and lead, reports Cop-Sil-Loy, Inc., Hollywood, Calif.

Called Cop-Sil-Loy, the material does not melt under temperatures of up to 1250F and sustains friction up to 900F. It carries heat away as rapidly as copper, lubricates as well as lead and does not deteriorate.

Easily applied, it fills in the pits and pores in the drum and lining surfaces of the braking portion of a machine so that total contact area of the two friction surfaces is increased 50%. Tests are said to have indicated that losses due to failure of present friction materials on drop forge hammers, punch presses, V-belt sheaves, conveyor belt systems, and similar units, can be reduced by 90%. It is also reported to have doubled the life of the friction materials, and increased efficiency by over 30%.

Cop-Sil-Loy is distributed by Dee Dee Co., 1595 Cross Roads of the World, Hollywood, Calif.

New National Center to Study Equipment Acquisition Policy

A new, scientific approach to the problems of acquiring new equipment and replacing obsolete equipment will begin this fall in the department of business and economics at Illinois Institute of Technology.

A national center will be established at the Institute to conduct education and research in the methods of industrial equipment acquisition and replacement. It will be sponsored by the Machinery and Allied Products Institute and I.I.T.

The center will have two basic objectives: the wide dissemination of information as to enlightened equipment policy; and sustained study of improved techniques and continued analysis of the problems and practices of business in the field.

As you want it • • •
muriatic acid
Wherever you want it • • •
PAPER — for fixing resin in wet strength paper
LEATHER—in chrome tanning
PETROLEUM—for oil well acidizing; treating catalysts
TEXTILES—for souring; removing hypochlorite bleach; dyeing
METALS — for pickling; descaling; plating
OTHER USES—in the manufacture of pharmaceuticals and food products

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KEX REG. U.S. PAT. OFF. NATIONAL SERVICE A COLUMBUS ROLLS PRODUCT INDUSTRIAL WIPING CLOTHS

It isn't Kex unless it's imprinted with the Kex name

Lukens Steel Rolls Commercial-Size Titanium Plates

Titanium plates 5/8" thick were recently rolled by Lukens Steel Company, Coatesville, Pa., on its 120" and 206" rolling mills. The plates were rolled from slabs weighing about 1000 lbs. each and 2½" thick.

Once considered a mere curiosity, of little commercial importance, titanium is of great engineering interest today because of its high corrosion resistance and great strength combined with light weight.

Lukens reports that the material rolled without much evidence of hardness, and apparently more easily than solid stainless steel. The rolled surface was free from surface checks, and the as-rolled edges were free of any edge-checking.

Lukens is not a titanium producer, but its unique facilities permit conversion rolling of such specialized materials as titanium.

Business Inventories Rise $2.8 Billion in First 6 Months

Business inventories at the end of June are estimated at $77 billion, the Office of Business Economics, U. S. Department of Commerce announced in its latest report.

After allowance for seasonal variations, the book value of inventories has risen about $2.8 billion in the first six months of this year—with about $700 million of this rise occurring during June.

The June increase in book values centered in manufacturing and in part reflected higher inventory costs. Trade stocks were up less than $200 million.

Durable and nondurable goods stocks rose about equally during June—with the durable-goods increase mainly in manufacturing, as a small rise in retailers' stocks offset a decline at wholesale establishments.

The increase in nondurable-goods stocks was about the same for manufacturers and wholesalers.

Retailers' inventories at the end of June amounted to $21.4 billion, about $100 million above the May seasonally adjusted rate. Most major groups of durable-goods retailers reported stocks slightly higher than at the end of the previous month. Inventories held by building materials and hardware dealers were a little lower.

Among nondurable-goods retailers, an increase of somewhat under

(*Please turn to page* 246)

Here's why PUROX
TRADE-MARK

Blowpipes cost so little to use and maintain

SELF-SEATING VALVES
with lifetime solid ring packing, designed for precise adjustment of valve drag. Stainless steel ball in stem reseats scored valve seat when valve wheel is turned tightly. Saves repair costs.

HANDLE ASSEMBLY includes:
Wear-resistant bronze front body with recessed seats for protection against damage. Heavy-walled seamless tubes rigidly anchored against hard use. Coiled oxygen tube suppresses flashbacks. Pressure forged brass valve body for strength without bulk. Built throughout for extra long, trouble-free service.

SLIP-FIT "O" RINGS
eliminate critical metal-to-metal gas seals between head and handle. Are easily replaced after long life. Replacements cost pennies instead of dollars.

INDIVIDUAL MIXER
in each head delivers perfect gas mixture for easiest and best work. Improved disk-type design resists flame pops and backfires, eliminates burnouts, and reduces maintenance time and cost.

SWAGED, PURE COPPER TIPS
have mirror-smooth internal passages for stream-lined gas flow which contributes to flame stability. Timesaving, quick-change welding heads snap in and out of handle; no wrench is needed.

The PUROX W-202 Blowpipe (illustrated) is for all-purpose welding and heating of any metal from 32-ga. sheet to plate or castings 1 in. and over in thickness. Available with your choice of standard welding heads in 13 sizes and multiflame heating heads in 3 sizes, all of the snap-in type. All heads have an amazing resistance to flashbacks, flame pops, backfires, and burnouts. Ask your LINDE jobber for a demonstration now. Or for further information, write to LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 E. 42nd St., New York 17, N. Y. In Canada: Dominion Oxygen Company, Limited, Toronto.

GET IT FROM YOUR

LINDE JOBBER

The terms "Linde" and "Purox" are registered trade-marks of Union Carbide and Carbon Corporation.

What it takes to make a 3000 Degree Refractory Concrete

Because of the widespread interest in the use of refractory castables, many furnace operators have asked us for the story behind the performance of B&W's unique refractory concrete, Kaocast.

Here are the answers to some of the most frequently asked questions:

Q. *When you refer to Kaocast as a 3000 degree refractory castable, do you mean that its melting point is 3000° F?*

A. No, this means that its service use limit is 3000° F; its melting point is 200 degrees higher.

Q. *Just what does it take to make a 3000 degree refractory castable like B&W Kaocast?*

A. Let's first define a few terms. Refractory castables are made with granular materials which are volume stable at high temperatures and which can undergo repeated heating and cooling cycles without disintegration. These materials, known as refractory calcines or grogs, are blended with suitable hydraulic binders. The initial strength of a refractory castable is thus developed in the same manner as that of ordinary concrete—that is, through the chemical action between water and the binder. A strong *ceramic bond* is formed when the refractory castable is subjected to temperatures above the vitrification point.

Q. *Then you have a grog, a binder and a method of putting them together. Which is most important?*

A. You can't say that any *one* is most important. It's a combination of all three. Let's take them one at a time. Our grog consists primarily of the proper blend of kaolin and other alumina-silica materials. This ratio enables us to achieve a grog with minimum expansion and shrinkage, a high fusion point, and greater stability under load, at varying temperatures.

Q. *And now, what about the binder?*

A. There are a number of factors responsible for the success of the Kaocast binder. One is the compound Tricalcium Penta-aluminate (3 lime to 5 alumina). This formula produces the most refractory compound (highest melting point) that can be made from lime and alumina. Another is that by using the purest commercially available lime and alumina, the Kaocast binder is substantially free of iron and silica. Such traces of these that are present combine during the prefiring of the binder to produce stable compounds.

Q. *Just how important is the manufacturing or "blending" of the grog and the binder?*

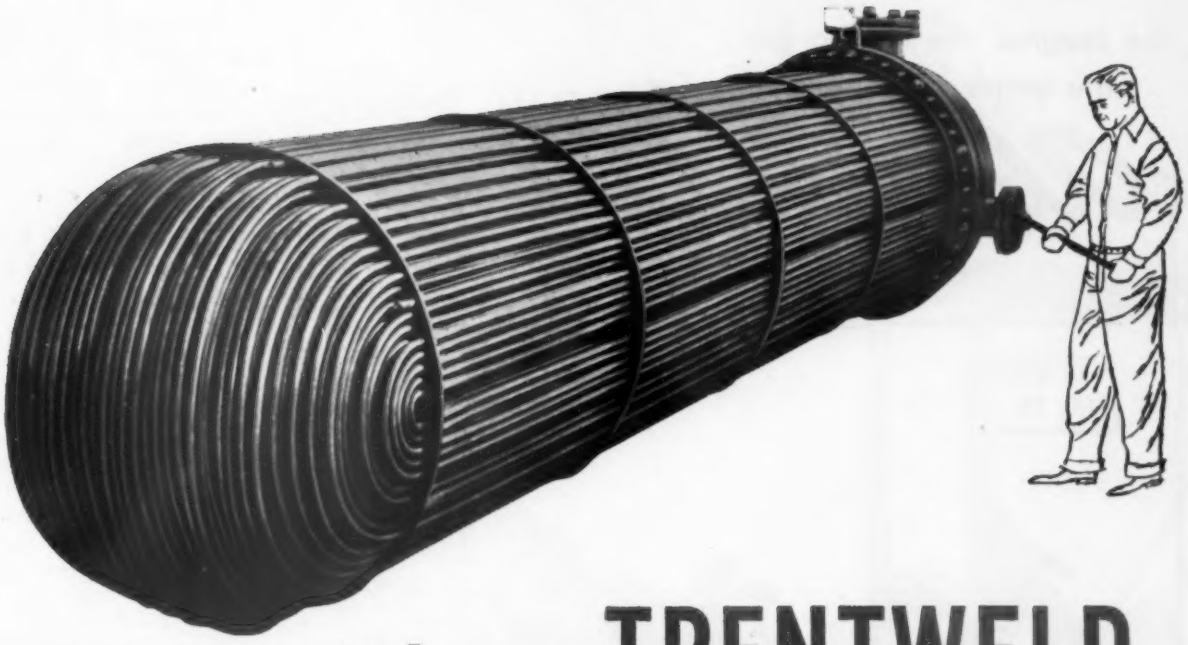
A. If one factor could be singled out as "most important" it would be quality control.

Direct control over the fineness of materials, prefiring temperatures, and other phases of manufacture is possible at B&W because both the grog and the binder are made and blended at B&W's Augusta Works—under B&W's direct control and supervision.

Q. *These factors you've discussed must add up to some specific advantages of Kaocast. What are they?*

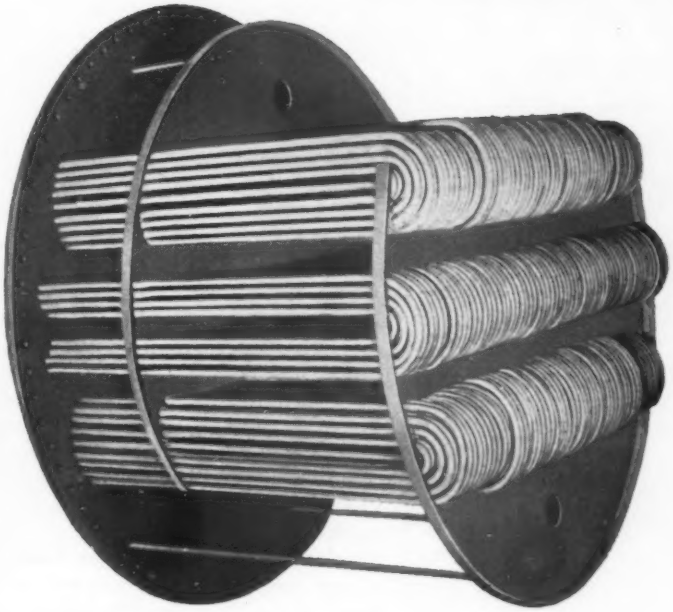
A. B&W Kaocast has all the advantages of easy installation which are responsible for the widespread interest in refractory concretes, plus these exclusive features: It is the only 3000 degree refractory concrete with high resistance to spalling and low volume change throughout its operating range.

THE BABCOCK & WILCOX CO.
Refractories Division
General Offices:
161 East 42nd St., New York 17, N. Y.
Works: Augusta, Ga.



you can't beat TRENTWELD

for *your* tubing requirements



Heat Exchangers built by Vulcan Manufacturing Division, Vulcan Copper & Supply Co., Cincinnati, Ohio.

Whether it's heat exchangers or milking machines, chemical equipment or fountain pens, or any of a thousand other applications, you just can't buy better tubing than TRENTWELD stainless and high alloy tubing.

One reason is that TRENTWELD stainless *welded* tubing is a product of tube mill specialists . . . worlds apart from job shop fabrication. All of our facilities are devoted solely to the production of top quality tubing.

TRENTWELD is made by an exclusive fusion-welding process in which no filler rod is used. Each piece has an accurate uniformly sound weld that is indistinguishable from the parent metal and just as strong and corrosion-resistant.

TRENTWELD is available in an extremely wide range of sizes from ⅛" to 40" O.D. and up, in most grades, gauges and finishes. Trent engineers are experienced in solving tubing problems in many fields. Write now and let us help with *your* application problem.

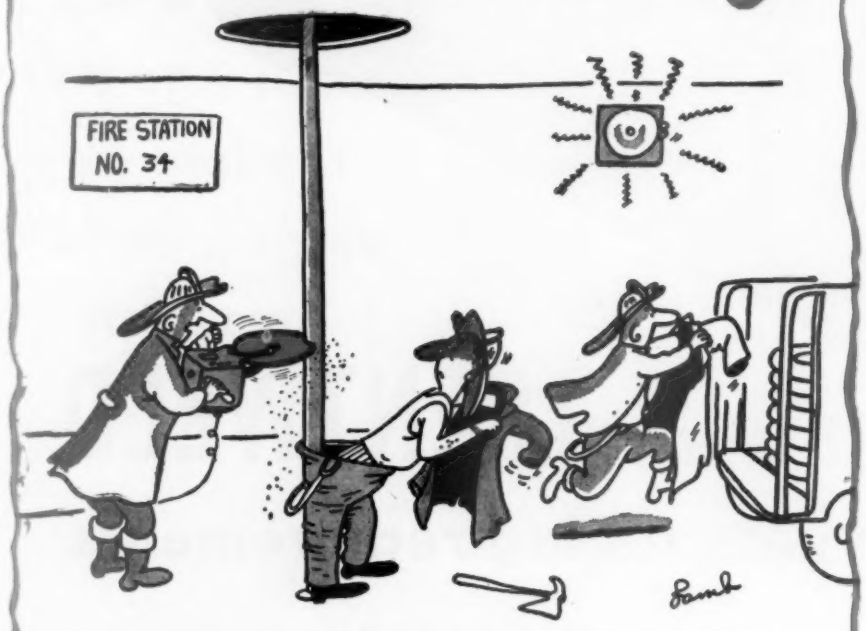
TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

the *tougher* the cutting job . . .
the *better* the opportunity for . . .

Abrasive Cutting



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Whether you have a specialized cutting job or a mass production problem, you can depend on Allison Wheels. Whatever the material or the condition, there is an Allison Abrasive Cutting Wheel processed and formulated to fit the job. This means faster cutting—fewer rejects—reduced operating costs.

Do you realize, Mr. P. A., that these Allison cost and time-saving advantages are available to you . . . together with Allison Specialized Service . . . *at a competitive price?* We invite you to investigate. Call us.

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(*Continued from page* 242)

$100 million in apparel stocks was mostly offset by small declines at food and general merchandise stores. Other kinds of business showed little change.

Sees Steel as Mainstay of U. S. Industrial Economy

Regardless of what happens, according to Max D. Howell, executive director, the American Iron and Steel Institute, at the Institute's 61st general meeting, over the long term steel will continue to be a mainstay of the industrial economy of the United States. The speaker pointed out that no industry here or anywhere else in the world had matched the postwar expansion and production of the steel industry in the United States.

It was begun voluntarily after World War II and is now nearing its goal. Over five billion dollars has been spent on it. With that privately-raised capital, the capacity of the steel industry has been increased over 26 million tons in the incredibly short span of seven years. This addition—just the addition—is more than two-thirds of Russia's annual output.

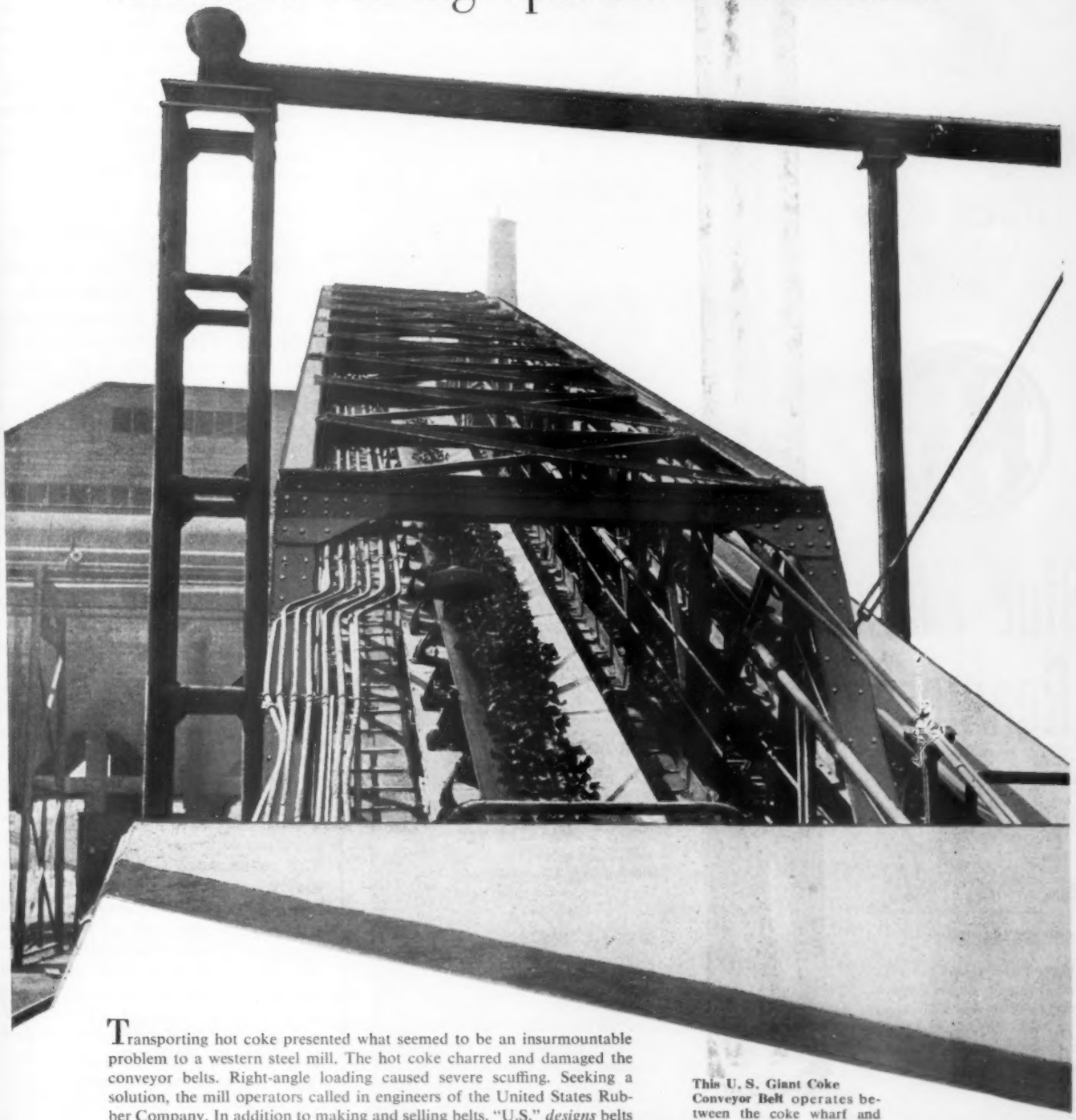
For this achievement Howell paid tribute to the industry's managerial skills and technical ingenuity. It has involved resourceful mobilization of iron ore sources and the economic development of new ones, more machinery and transportation equipment, increasing supplies of scrap and other materials, new facilities and rearranged plants. Ample steel producing capacity is the nation's right arm, according to the speaker. If the demand for steel for defense purposes continues for some time to come, as could be deduced from President Eisenhower's recent remarks, this will involve no great problem. The industry has been in recent years producing more steel than ever before—providing the steel required for defense and at the same time for a strong domestic economy.

Net Income Fell 22%

The American Iron and Steel Institute revealed that the net income of 52 iron and steel companies, representing nearly 93% of total steel ingot production, fell more than 22% in 1952 from the previous year. Total profits fell to the 1949 level despite substantial increases in the production of the various products as compared with that year. The adverse financial trends in

(*Please turn to page* 248)

Hot coke coming up...via U. S. Rubber



Transporting hot coke presented what seemed to be an insurmountable problem to a western steel mill. The hot coke charred and damaged the conveyor belts. Right-angle loading caused severe scuffing. Seeking a solution, the mill operators called in engineers of the United States Rubber Company. In addition to making and selling belts, "U.S." *designs* belts that meet *precise specifications and unusual conditions.* In this case, the "U.S." engineers designed a special belt. It is performing so well that it will carry a record tonnage for this drive, saving many thousands of dollars in belt replacements.

This mill also uses many other "U.S." products—including industrial hose, pilot pipe, and packings. The entire installation is a good example of how "U.S." serves industry, and of how "U.S." *quality* products enable you to operate more *economically.* Our 25 District Sales Offices, each staffed with engineers, are at your service. Write to address below.

This U. S. Giant Coke Conveyor Belt operates between the coke wharf and the blast furnace. Length is 1170 feet.

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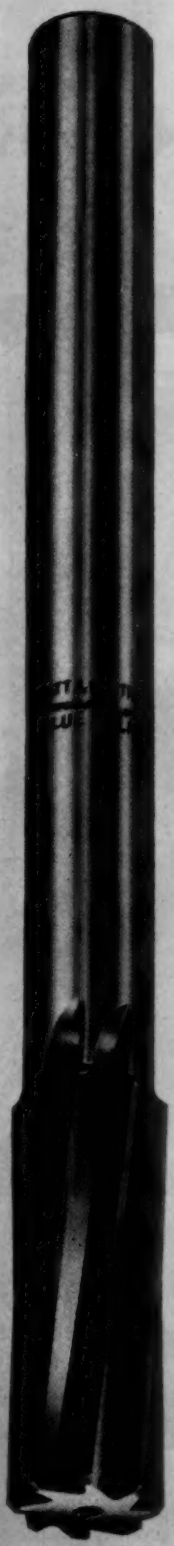
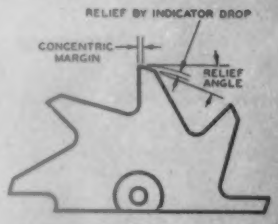
MORE SMOOTH ACCURATE HOLES at LOWER COST with

Blue-Helix Reamers



RELIEF BY INDICATOR DROP



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Right hand spiral cut with positive rake at the cutting edges—a design pioneered by P&W—assures fast, free cutting with ample chip clearance.

Here's Why

DISTINCTIVE P&W SPECIAL SURFACE TREATMENT

Special additional P&W surface-hardening process gives longer wear life with superior resistance to chip abrasion.

SMOOTHER GRINDING

Provides maximum resistance to wear.

SUPERIOR ACCURACY

Cutting Diameter, Shank Diameter and Chamfer closely controlled to meet rigidly high P&W standards for size and concentricity.

AVAILABLE

. . . from stock in standard diameters with straight or taper shanks. Also available, special diameters from .0310" to 1.537" with straight shanks, and from .222" to 1.537" with taper shanks, promptly finished to order from hardened in-stock blanks.

YOU CAN

put a P&W Blue-Helix Reamer on any job in your shop—from abrasive high-silicon aluminums to high-tensile heat-treated alloy steels—with full assurance that it'll do the job right . . . at lower cost!

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(*Continued from page 246*)

1952 were due to the long strike and an increase in wage rates. Also, the higher charges connected with the rapid expansion in capacity, including a new high level in long term debt, were responsible. Since 1949, stockholders' equity in the 52 companies has increased over $1.4 billion or 28% but this additional investment yielded the owners nothing last year, since total profits were down to the 1949 level.

Magnetic Amplifier's Role in Industrial Regulating Systems Increasing in Importance

The widening and increasingly important role the magnetic amplifier is playing in the trend toward complete industrial automation was outlined recently in a symposium conducted by the Westinghouse Electric Corporation.

The magnetic amplifier is a reliable, versatile component of regulating system applications in industry. Voltage and current are the basic signals used to cue magnetic amplifiers, but they can be used to control any quantity from which a voltage or current signal proportional to the desired performance can be obtained.

Speed, torque, tension, horsepower, and position are examples of cues which can be translated into electrical signals to furnish intelligence to a regulator.

Lack of satisfactory basic materials had delayed widespread application of the device until recently. The renaissance taking place in the magnetic amplifier field, Westinghouse engineers said, has been made possible by the use of new techniques in production materials control, which has in turn permitted design changes of a revolutionary nature. It is expected, they stated, that the current development of new magnetic alloys and magnetic materials in conjunction with the silicon rectifier and silicon power transistor will rapidly expand the field of ultra-reliable economic power control and automation.

The extent to which regulators can assume control of modern processing operations, Westinghouse spokesmen pointed out, is illustrated by the number of systems used at the new Fairless Plant of the United States Steel Corporation. There drives are being supplied for a skin pass mill, a cleaning line, the finishing stands of the hot strip mill, the

(*Please turn to page 250*)

Get

something extra

when you buy

lead sheet

When you place an order for lead sheet, chances are you state quantity, composition, size and weight, and that's all.

When you buy from National, you not only get sheet that meets these four specifications but you also get certain "extras"—extras characteristic of the *high quality* lead sheet made by the leader in lead.

Such as

(1) The grade of lead acknowledged best for acid-handling—St. Joe Chemical Lead.

(2) A smooth, even finish.

(3) A surface as free of flaws as careful milling can make it.

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(5) Maximum structural strength throughout.

These extras contribute to adaptability, workability, and durability – whether the sheet is used for handling corrosives, for architectural installations, or for radiation barriers.

It is these extra qualities, not specifically stated in your order, that give National Lead sheet its dependability on the job.

That's why we say—when you want lead sheet—come to National. And get something extra.

Sheet Lead

with a NATIONAL reputation

LEAD COMPANY

New York 6; Atlanta; Baltimore 3; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; New England: National Lead Co. of Mass., Boston 6; Pacific Coast: Morris P. Kirk & Son, Inc., Los Angeles 23, Emeryville 8 (Calif.), Portland 10, Seattle 4; Canada: Canada Metal Co., Ltd., Toronto 8, Montreal, Winnipeg, Vancouver.

*Reg. U. S. Pat. Off.

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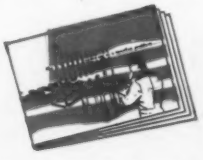
packing time cut 60%
materials cost cut 17%
shipping weight cut 9%

With General Engineered Containers

Wherever these giant cylindrical pressure sterilizers are going, it costs less to ship them. General container engineering cut material cost $2.00, saved 70 minutes packing time and reduced shipping weight 42 lbs. on this hard-to-pack item . . . and this is only 1 of 12 cost-cutting containers we have helped to create for Ohio Chemical and Surgical Equipment (a Division of Air Reduction Company, Inc.) since 1949.

Whatever your packaging problem, military or civilian, General Box Company's two fine packaging laboratories and trained packaging experts stand ready to help you solve it. Find out how *you* can cut costs. Write for complete details.

Find out how other manufacturers are cutting container costs. Write for your free copy of "The General Box."



General Box COMPANY
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Des Plaines, Ill.

Factories: Cincinnati; Denville, N. J.; Detroit, East St. Louis, Kansas City, Louisville, Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston

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• Wirebound Crates and Boxes • Generalift Pallet Boxes • Corrugated Fiber Boxes
• Cleated Corrugated and Watkins-Type Boxes • Stitched Panel Crates • All-Bound Boxes

(*Continued from page* 248)

main drive for the 40" blooming mill, and the main and auxiliary drives for the 45" slabbing mill.

Westinghouse revealed that in the steel, paper, lumber, materials handling, rubber and textile industries, 57 jobs have been sold involving 122 different magnetic amplifier regulators ranging from voltage regulators for a 24,000 KW rectifier on a hot strip mill to 3 hp tension regulators on a textile slasher.

Use of magnetic amplifiers has permitted the regulator system designer to take advantage of standardized system components to a much greater degree than ever before in the industrial control field. This has resulted in the development of a line of standard magnetic amplifiers and panels for industrial control applications. A basic group of 20 different magnetic amplifier reactor provides for about 90% of the magnetic amplifier applications in the industrial control field.

* * *

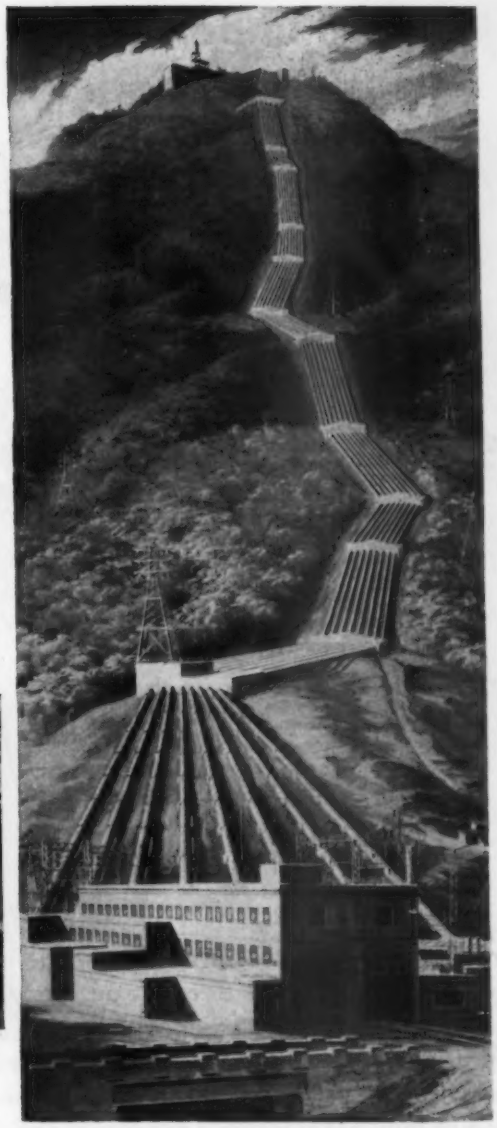
Aluminum Industry Sets More Production Records

For the second time this year the U.S. aluminum industry has set new quarterly records. The 623,399,569 pounds of primary aluminum produced in the second quarter was 9% over the record first quarter's production, and 33% over that in the second quarter of 1952 according to latest figures of The Aluminum Association.

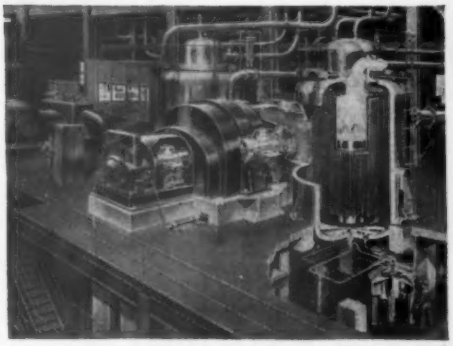
Although the primary production in June of 208,303,690 pounds was more than 2½ million pounds under the 210,953,111 pounds for May, the industry's daily production averaged almost 7,000,000 pounds, a new peak. For the first half of 1953, primary production totaled 1,197,-407,109 pounds, about 30 per cent over the 923,072,606 pounds for the same period of 1952. More primary aluminum was turned out in the first half of 1953 than during the entire years of 1945, 1946, or 1947.

Shipments of aluminum sheet and plate by member companies of the Association's Sheet Division also reached new leve's. The second quarter total of 371,956,975 pounds was some 28 million pounds over the 343,609,224 pounds for the first quarter of the year. Both the 1953 second quarter and first half totals were 44% over the corresponding figures for 1952. Shipments in June of this year totaled 120.645,200 pounds compared with 122,756,743 pounds in May.

BRAZIL—Cubatao power plant, São Paulo, uses river waters—backed up to edge of high plateau and channeled down through mile-long penstocks—to run 8 turbines. Capacity—474,000 kw.

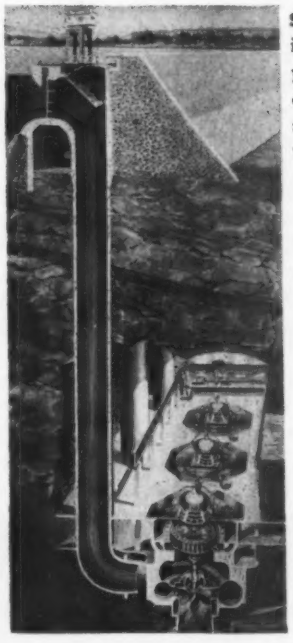


AUSTRIA—Tauern Power Plant, Kaprun, utilizes waters of melting glaciers to run its turbines—will generate 316,000 kw when finished!

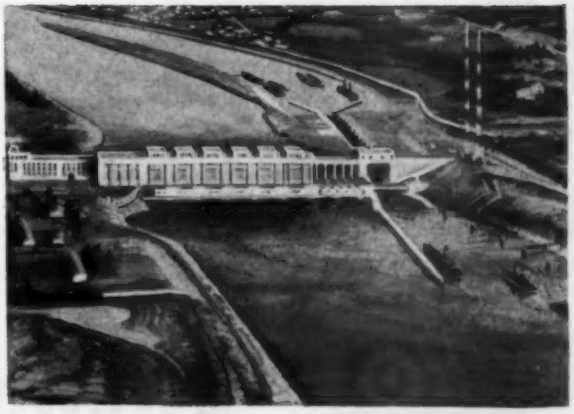


UNITED STATES—World's first mercury unit—power plant teams two 7,500-kw mercury turbines with a 25,000-kw steam turbine. Steam, generated with mercury vapor, is condensed for re-use, runs steam turbine.

POWER WORLD



SWEDEN—Harspranget Station in Arctic, country's biggest, produces 450,000 kw. Water drops 351 feet down vertical shafts to turn underground turbines!

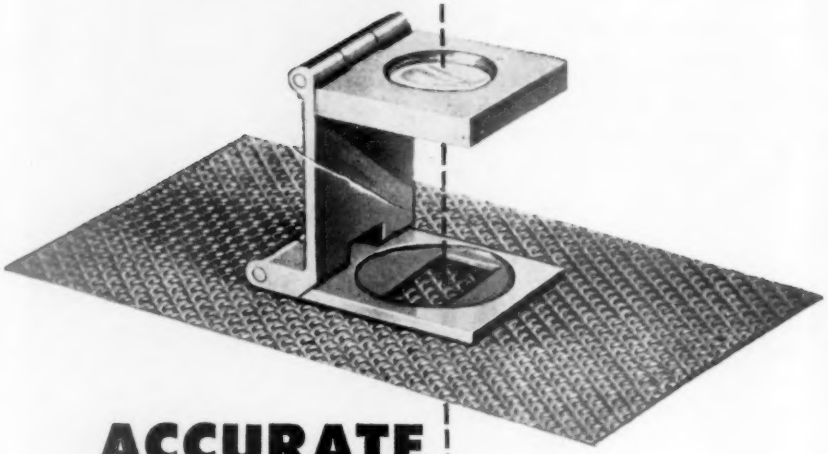


FRANCE—Donzere-Mondragon Power Plant on the Rhone, largest hydro-plant in Western Europe. Six 70,000-hp turbines produce 2,000,000,000 kw hr. annually...an unusual achievement considering the small head, or drop, in the river.

SOCONY-VACUUM

Correct Lubrication

An Important Wire Cloth Check Point



ACCURATE MESH COUNT

It follows that when you are screening material to get solids of a definite size, the accuracy of your end product depends on the accuracy of the mesh you use. If you think you are using a screen with 0.012″ openings, when in reality you are using a screen with openings measuring 0.0185″ (both of these openings are possible in 40 x 40 mesh cloth), the size of your product may not meet your process specifications.

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We make wire cloth accurately woven from all commercially used metals in sizes ranging from 4 inches (space cloth) to 400 mesh.

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Issue Important New Book on Industrial Standardization

A new book on industrial standardization, with particular interest and significance for purchasing men, has just been published by the Book Division of Conover-Mast Publications.

Titled "Profiting from Industrial Standardization", the 381-page volume offers a practical, up-to-date guide for the application of standardization to any company's programs of cost-reduction and product improvement. It was written by Benjamin Melnitsky, well known writer and authority on the purchasing field, and author of the valuable "Management of Industrial Inventory."

Main objectives of the book are: to give an over-all, but concise, view of standardization as it exists in industry today; to show how any one company can profit from standardization; to show how to develop and distribute—and use—industrial standards in an individual company. Typical of its 25 chapter headings are: "Developing Company Standards"; "Selling Company Standards"; "Standard Parts"; "Standard Engineering Materials"; "Specifications and Testing"; "Purchasing Standards."

Mr. Melnitsky has supplemented each chapter with actual case histories.

In his foreword to the book, Stuart F. Heinritz, Editor of PURCHASING, says: "A practical and definitive book on industrial standardization such as Mr. Melnitsky has prepared is exceedingly timely and worthy of close study by every forward-looking management executive."

(*Please turn to page* 258)

NEXT TIME...ORDER SCOTTISSUE TOWELS!

1. They drink up water like an Airedale in August.

2. They're strong — even when soaking wet.

3. They're so soft that many people use them as face cloths.

4. They're clean and white — of course.

5. They're double-fold to dry double-quick.

EVER PLAY "GUESS THE WEIGHT"?

ScotTissue Towels have an exceptionally high fibre content. This "bulk," plus generous size and double fold, makes a case of 3,750 ScotTissue Towels weigh 46 lbs.* Some paper towels cost less for 3,750 but are 10 to 20 lbs. lighter*— hence less drying power. Write for more facts. Scott Paper Company, Dept. P, Chester, Pa.

*Shipping weight

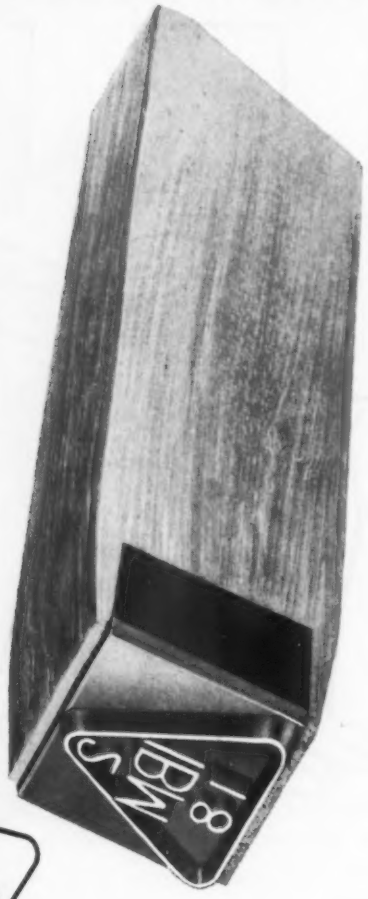
SCOTTISSUE **TOWELS**

Symbol of the right kind of washroom

"ScotTissue," Reg. U. S. Pat. Off.

NEW! ENGRAVED *Vinylite* INSPECTION STAMPS

are better than rubber 3 ways



ENGRAVED *Vinylite* IS ACID-PROOF

Acid etching inks, used for permanent stamping on metal and all non-porous surfaces will eat away at rubber. Vinylite resists this action—gives longer life by far!

ENGRAVED *Vinylite* STAMPING GIVES RAZOR-SHARP IMPRESSIONS EVERY TIME

Opaque inks will clog shallow rubber stamp faces rapidly. Our deep-molded engraved VINYLITE stamp faces have more than three times the depth of ordinary rubber stamps. Markings always remain super sharp . . . an important advantage since this mark is a permanent record of your inspector's approval.

ENGRAVED *Vinylite* HAS CUSHION-LIKE RESILIENCE

Our VINYLITE molding process includes a timed curing that imparts to this versatile plastic all the elasticity of rubber. Resilient VINYLITE resists abrasive action, conforms to irregular surfaces . . . and lasts much longer!

Engraved Vinylite stamp faces are adaptable to any marking device. They can be used to stamp on every surface, metal, wood, fabric, paper, plastic, etc.

Some of the many industries now using ENGRAVED *Vinylite* STAMPS

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ELECTRICAL
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POTTERY & CHINA
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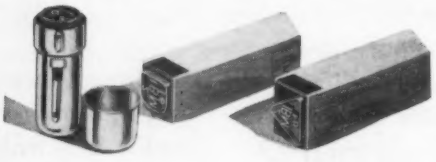

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(*Continued from page* 254)

"Profiting from Industrial Standardization" is now available from Conover-Mast Publications, 205 East 42nd St., New York 17, N. Y., at $5.50 per copy.

* * *

Western Electric Purchasing Uses 27,500 Suppliers

More than 27,500 suppliers aided the Western Electric Company last year in meeting the needs of the Bell telephone companies which now serve more than 40,000,000 telephones.

This makes Western, as buyer for the Bell System, a customer of perhaps more firms than any other company in the United States. About 18,000—65 percent—of the suppliers are in the class of small businesses having less than 500 employees.

Although this number of suppliers represents an increase over previous years, spreading the work has always been part of the company's purchasing philosophy. Its importance was underscored recently in a government statement urging defense contractors to cooperate with the small businessman "It is the responsibility of each buying organization to consider not only new sources of supply but also reasonable dispersion of purchases geographically in order to broaden the base of available supply, increase competition, reduce the effect of any work interruptions and cooperate with the government in its effort to assure small business a share of defense orders."

Western Electric's suppliers are located in 2,700 cities and towns in every state of the union. Purchases in each town in which there is a supplier amounted to an average of $220,000.

Aside from domestic suppliers, the company bought from eight foreign countries and territories including such communities as Leatherhead Surrey, England; Chuquicamata, Chile; Strathleven, Scotland; and Kramfors, Sweden.

As the manufacturing and supply unit of the Bell System, Western Electric does virtually all the buying for the System and last year its purchases topped $600,000,000 in behalf of telephone companies and for products used in its own manufacturing operations. The company also manufactures significant quantities of special apparatus related to its field for the government and in 1952 some 6,500 suppliers and subcontractors shared in this work.

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For the product you make today and the product you plan for tomorrow.

McLOUTH STEEL CORPORATION
DETROIT, MICHIGAN
Manufacturers of Stainless and Carbon Steels

Personalities IN THE NEWS

Frank J. Reynolds, Purchasing Agent of Willard Storage Battery Company, has been appointed to the executive staff of the organization.

Frank J. Reynolds

Mr. Reynolds is a veteran of 36 years' service with Willard, having joined them as Assistant Purchasing Agent in 1917.

T. A. van Griethuysen, coordinator of transportation and supplies for Continental Oil Company, Houston, has been elected a vice president by the company's board of directors.

As vice president in charge of transportation and supplies, Mr. van Griethuysen will continue to direct Conoco's crude oil trading, transportation, purchasing and pipe line operations.

A member of the purchasing department of S & C Electric Co., Chicago, since 1945, **A. B. Chilcoat** has been appointed to the newly-created post of Director of Purchasing and Production.

Prior to joining S & C, he was associated, for many years, with General Motors.

C. C. Randolph, Jr., will assume responsibility for raw material and container purchases for the Calco Division of American Cyanamid Company, Bound Brook, N. J. This will be in addition to his other duties as assistant to W. C. Harmon, Jr., Divisional Manager of Purchases.

Mr. Randolph was formerly associated with the Barrett Company in 1925 and with the U. S. Tar Company in 1933. He was assistant sales manager of chemical sales for Pittsburgh Coke and Chemical Company from 1940 to 1943.

After serving as a Lieutenant Commander in the Navy during World War II, Mr. Randolph joined the Calco organization as assistant manager of their Willow Island, W. Va., plant.

In 1951 he was named assistant to the Manager of Purchases for the Calco Division.

Emanuel J. Johnson has been named Purchasing Agent for the southeastern area of Rayonier, Inc., Jesup, Ga.

Mr. Johnson joined Rayonier in 1937 in charge of purchasing for their Fernandina (Fla.) Division. He will make his new headquarters at Jesup.

Western Gulf Oil Company has named **Leslie P. Smith** as Purchasing Agent.

Mr. Smith joined Western Gulf in 1946 as a Purchasing Clerk and was later appointed Assistant Purchasing Agent.

The Quaker Oats Co., Chicago, has elected **Myron J. Aubineau** as Vice President in charge of Purchasing.

The Electric Boat division of General Dynamics Corporation, Groton, Conn., has named **Raymond B. Carey, Jr.**, former production assistant, to the newly-created post of Assistant Purchasing Agent in charge of expediting all Electric Boat purchased material.

Approximately 75 persons employed in the purchasing and central engineering of the Celanese Corporation of America, New York, have been moved to Charlotte, N. C., preparatory to moving into the firm's new offices there.

Larry G. Mayne, formerly in charge of export sales for Niagara Chemical Division, Food Machinery and Chemical Corporation, is now Purchasing Agent of the company.

Mr. Mayne, a graduate of the University of Michigan, joined Niagara in 1947 after a period in the Navy during World War II. His first assignment with Niagara was as a chemical engineer with the research department working in pilot plant process development.

K. K. Boyd, former secretary and director of sales and purchases for Emery Industries, Inc., Cincinnati, has been elected Vice President of Sales and Purchases.

The MacWhyte Company, Kenosha, Wis., has named **John W. Goodwin** as Purchasing Agent to succeed the late Charles F. Lamich.

John W. Goodwin

Mr. Goodwin joined the MacWhyte organization as an office clerk in 1935 later moving to the storeroom and the steamfitting department.

Upon reurning from duty with the U. S. Navy during World War II, he rejoined the steamfitting department. In 1946 he was transferred to the purchasing department and for the past several years he was assistant to the Purchasing Agent.

HERE'S A CANVAS GLOVE WITH A *Safer, Surer* GRIP!

AND GUARANTEED TO SAVE YOU MONEY!

In a series of gripmeter tests of "Plastic-Dot" versus regular canvas gloves, Sailor White, the famous strong man, more than doubled his gripping power when he wore "Plastic-Dots."

Riegel "Plastic-Dot" work gloves are guaranteed to outwear two or more pairs of heavy canvas gloves. They will save you money on any operation where you are now using any weight or make of regular canvas gloves. At the same time, they provide a safer, surer grip . . . with full working comfort.

See for yourself how this amazing glove wears and wears! Send for a free pair for testing, together with full information and complete list of local distributors.

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"PLASTIC-DOT" Trade-Mark **WORK GLOVE**

GUARANTEED TO OUTWEAR TWO OR MORE PAIRS OF HEAVY CANVAS GLOVES

Now in a wide range of styles . . . stocked by over 1,000 distributors from coast to coast.

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Send me free sample of Riegel "Plastic-Dot" work glove fabric and list of distributors.

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The wrong size of hat may look funny, but the wrong shipping container is no laughing matter. More often than not, it is the cause of excessive shipping losses, damage claims and transportation charges.

SUPERSTRONG laboratories are maintained for the design of perfectly balanced boxes and crates that will enable a product such as yours to be shipped safely, compactly and economically.

Nearly a century of experience and dependability recommends SUPERSTRONG as a source of known quality for your shipping container requirements.

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STARCH TRAYS · · · PALLETS

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RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Ridley Orton has been appointed Purchasing Agent for the new Decatur, Ill., plant of the Caterpillar Tractor Co.

Mr. Orton has been in the Purchasing Department of Caterpillar since he joined the organization in 1939. From 1952 until his present assignment, he has been Purchasing Agent for the firm's Peoria plant.

Charles D. Barnes has been named Plant Purchasing Agent at the newly established Marion Forge Division, Marion, Ohio, according to Vincent Cada, Manager of Purchases, Eaton Manufacturing Company, Cleveland.

Mr. Barnes was previously associated with the Federal-State Division of Markets, Bishop and Babcock Co., and the sales department of Automotive Parts Co. He joined Eaton's central purchasing department in 1941.

Eugene Johnson has been named Purchasing Agent for Lydia and Clinton Cotton Mills, Clinton, S. C., to succeed Bailey Williams.

William Banas has been appointed Assistant Purchasing Agent for the Cajon Valley Union School District, Calif., replacing Miss Ann Thornton.

J. P. Engle, formerly Assistant Purchasing Agent for Sinclair Refining Co., has been named Purchasing Agent of Sinclair Oil and Gas Co., Tulsa. He succeeds H. A. Woodward, who retired after serving at the post since 1917.

J. Clifton Coates has been named Purchasing Agent for Rock of Ages, Graniteville, Vt.

Mr. Coates became associated with Rock of Ages when that firm took over Wetmore & Morse Quarry in 1947. At that time, Mr. Coates was office manager for Wetmore & Morse. In 1950 he was transferred to the sales department with duties as Purchasing Agent for Wetmore & Morse operations.

Robert J. Froeber has been named Purchasing Agent for Hanes Hosiery Mills, Winston-Salem, N. C.

C. Monroe Wiegand has been appointed vice president of Avon Products, Inc., in charge of Purchasing, at the firm's main office in New York. He had formerly been Director of Purchases.

The Suffolk County (N. Y.) Board of Supervisors has named **Fred B. Hose, Jr.,** as County Purchasing Agent.

Charmin Paper Mills, Greenbay, Wis., has promoted **Harry F. Bins** from Purchasing Agent to Director of Purchases. **Joseph Horan** takes over Mr. Bins former post as Purchasing Agent with **Gene Kassner** as Assistant Purchasing Agent.

...stainless castings cut costs

Considerable savings in both material and machining time are effected when Crucible Stainless Steel Sand Castings are used. And here are two good examples.

The heat deflector — which protects vital turbine assembly parts in an advanced model aircraft engine — was cast by Crucible from AMS-5363A (Type 347) stainless . . . in conformance with rigid aircraft quality standards. Previously this part had been completely machined from a solid forging. The cast part performs the same job, but at a substantial saving in manufacturing cost.

The bowl base for a dairy cream separator was cast by Crucible from CF-20 (Type 302) stainless. To permit fast and efficient finishing in automatic machine tools, the casting must be held to close tolerances. Also, it has to be free from porosity, shrinkage, gas holes, inclusions or any defects that in the finished part would interfere with cleanliness or violate food laws.

Both the heat deflector and the bowl base applications exemplify how steel and machining time may be saved by using a stainless steel casting instead of machining from bar stock or a forging. If you make a product that must resist corrosion, consult Crucible regarding the advantages of producing it from a stainless sand casting.

CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

STAINLESS CASTINGS

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STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

Unusual Care...

Bella is a mother dog in Hamburg, Germany whose master offered to let her care for an abandoned tiger cub. The mixed family seems very happy, even at suppertime!

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▶ In long-distance moving unusual care means extra protection, extra precaution, extra attention to every detail. That's what you want . . . and that's what you get when you move your personnel the safe and easy Mayflower Way! Mayflower has standardized into its service—and in many cases pioneered—more major refinements in long-distance moving than any other carrier. For example, Mayflower maintains fully-equipped maintenance shops to prevent breakdowns before they can occur by keeping Mayflower vans always in tip-top operating condition. That's just one of the reasons why it will pay you to call your local Mayflower representative whenever you have personnel to move long-distance.

Extensive maintenance shops keep Mayflower vans rolling on schedule.

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Mayflower's organization of selected warehouse agents provides on-the-spot representation at the most points in the United States and Canada. Your local Mayflower agent is listed in the classified section of your telephone directory.

Guaranteed by Good Housekeeping

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America's Finest

NATION-WIDE FURNITURE MOVERS

The Hyster Company, Danville, Ill., has named **John W. Singer** to the post of Purchasing Agent and **Jack Cavanaugh** as Assistant Purchasing Agent.

Both men are graduates of the University of Illinois. Mr. Singer has been with Hyster since 1949, while Mr. Cavanaugh joined the organization in 1951.

A member of the purchasing department since 1946, **John W. Averill** has been appointed Purchasing Agent for the Stromberg-Carlson Company.

A graduate of the University of Pennsylvania, where he majored in economics and earned his B.S. degree in industrial management, Mr. Averill has been with the company since 1942.

John R. Dyer has been approved by the Executive Council as Purchasing Agent for the State of Maine to succeed the late Homer M. Orr.

Mr. Dyer has been Deputy Purchasing Agent for the past five years.

Clare Hughes has been appointed Purchasing Agent for Nevada County, Calif., by unanimous vote of the board of supervisors.

George S. Frank, who has been one of the nation's most important figures in educational and institutional buying developments, is relinquishing his post as Manager of Purchases at Cornell University after 32 years of service.

His successor will be **John Jordan Jr.,** Assistant Manager of Purchases and a member of the Cornell staff since 1930. Phillip J. Krebs, with 17 years' service, will succeed Mr. Jordan.

Kenneth W. Short has been transferred from the Port Plastics, Ohio, plant of Monsanto, where he had been Purchasing Agent and Traffic Manager, to take over the functions of purchasing and procurement for Shawinigan Resins Corporation, Indian Orchard, Mass.

Clinton Bishop has been named Purchasing Agent of the Alan Wood Steel Company, Conshohocken, Pa., replacing the late George H. Lange.

Mr. Bishop has been a member of the Alan Wood Steel Company for the past 20 years.

Robert E. Jaggard, manager of the Navrat Office Equipment Company, Garden City, Kans., has been named as Purchasing Agent for Garden City's schools.

Denis Curtin, formerly Purchasing Agent for the Knickerbocker Hospital, New York, has been named to the post of Purchasing Agent for the Altoona (Pa.) Hospital.

Born in Ireland, Mr. Curtin has been associated with various New York industrial firms, hospitals, food chains, and warehouses in purchasing activities.

Money-Savers

Only Midwest "Long-Tangent" Elbows have these longer tangents (dotted lines indicate their length beyond ends of ASA Elbows). Tangents are ¼ of nominal diameter: a 12" elbow has tangents 3" long.

This young man's dad also saves money. But he does it by specifying Midwest LONG-TANGENT Elbows whenever he needs welded piping. These elbows (see above) can be lined up with pipe more quickly and accurately. Less pipe is required and a short nipple (with its extra circumferential weld) is frequently eliminated. Slip-on welding flanges are easily used with minimum change in either flange or fitting. And then . . . Midwest "Long-Tangent" Elbows cost no more than ASA Elbows. You, too, can save money by specifying them on your next welding fittings order.

MIDWEST PIPING COMPANY, INC.

Main Office: 1450 South Second Street, St. Louis 4, Mo.

Plants: St. Louis, Passaic, Los Angeles and Boston

Sales Offices:

New York 7—50 Church St. • Chicago 3—79 West Monroe St.
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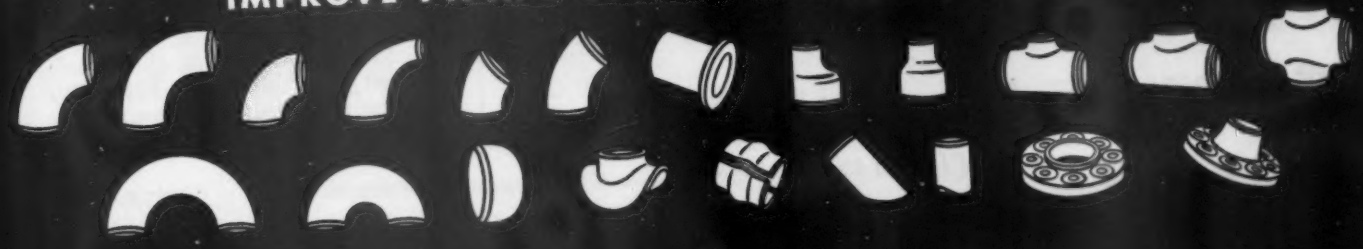
STOCKING DISTRIBUTORS IN PRINCIPAL CITIES

MIDWEST WELDING FITTINGS

IMPROVE PIPING DESIGN AND REDUCE COSTS



BALANCED FOR EASY WHEELING!

You'll find it so easy to wheel heavy loads in Sterling Barrows. Only a minimum of effort is required. Sterling's perfectly balanced construction permits 80% of the load to be carried on the wheel . . . only 20% by the operator. This increases efficiency . . . allows more loads to be hauled each day . . . reduces hauling costs.

ORDER NOW!

DEALER PLAN AVAILABLE. WRITE FOR DETAILS.

Equipped with steel wheel or wheel with zero pressure or pneumatic tire.

Model C5W with Pneumatic Tired Wheel and Wood Frame.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

AMERICAN Tubular and Split RIVETS

. . . In all metals, all styles, for all industrial applications.

Write for price list.

AMERICAN RIVET COMPANY
849 N. Kedzie Ave., Chicago 51, Ill.

BUY AMERICAN...Tubular and Split Rivets...

The Henry L. Brueggemann award given by the Purchasing Agents Association of Chicago to an outstanding purchasing personality in the 3rd District, NAPA, has been presented to **C. M. Oberling,** Purchasing Agent, National Lock Company, Rockford, Ill.

Mr. Oberling, who has long been active in purchasing groups, was national association director in 1938, 1939, and 1940. In 1944 he served as vice president of District 3.

Herbert C. Salzer has been appointed Steel Purchasing Agent for the Motor Wheel Company, Lansing, Mich.

Mr. Salzer has had 19 years of experience and association in the steel industry. During World War II he served as head of the Steel section, Bureau of Ships. From October, 1950 to October 1952 he was officer in charge. Raw Materials Branch, Bureau of Ships.

J. Emmet Judge has been named Assistant General Purchasing Agent of Lincoln-Mercury, according to C. S. Brown, General Purchasing Agent. In addition to Mr. Judge's assignment, it was announced that **S. A. Cornell** has been named Manager of the Purchase Analysis Department and **F. S. Strong** as Senior Buyer for the Service and Accessories Section.

Robert C. McAloney, Purchasing Agent, Coats & Clark, Inc., Toccoa, Ga., has been elected District Governor of District 18-D, Lions International, at the recent state convention in Macon.

Slick Airways, Inc., Burbank, Calif., has named **William K. Lazzerini** to the post of Purchasing Agent to succeed Roy L. Herold who resigned.

Philip D. Richmond, Purchasing Agent for the Edgewater Works, N. J., of the Aluminum Corporation of America, has become a member of the company's Twenty-five Year Club.

Mr. Richmond joined Alcoa in Boston in 1928 as an office assistant. He later advanced to credit manager and during World War II he served at Maspeth, Long Island, N. Y., as District Purchasing Agent.

He transferred to the purchasing department in Pittsburgh in 1944 and on March 1, 1948 he became Assistant District Purchasing Agent at Edgewater.

PURCHASING erroneously announced that **John N. Hartwell** had been named Purchasing Agent for Worcester Pressed Steel Co., Worcester, Mass. It should have been Purchasing Engineer.

Carroll C. Fletcher is Purchasing Agent for the company and has been so for the past 17 years.

POCO HTB GREASE hangs on through HEAT and WET!

Proves usefulness over wide range of temperature and moisture conditions.

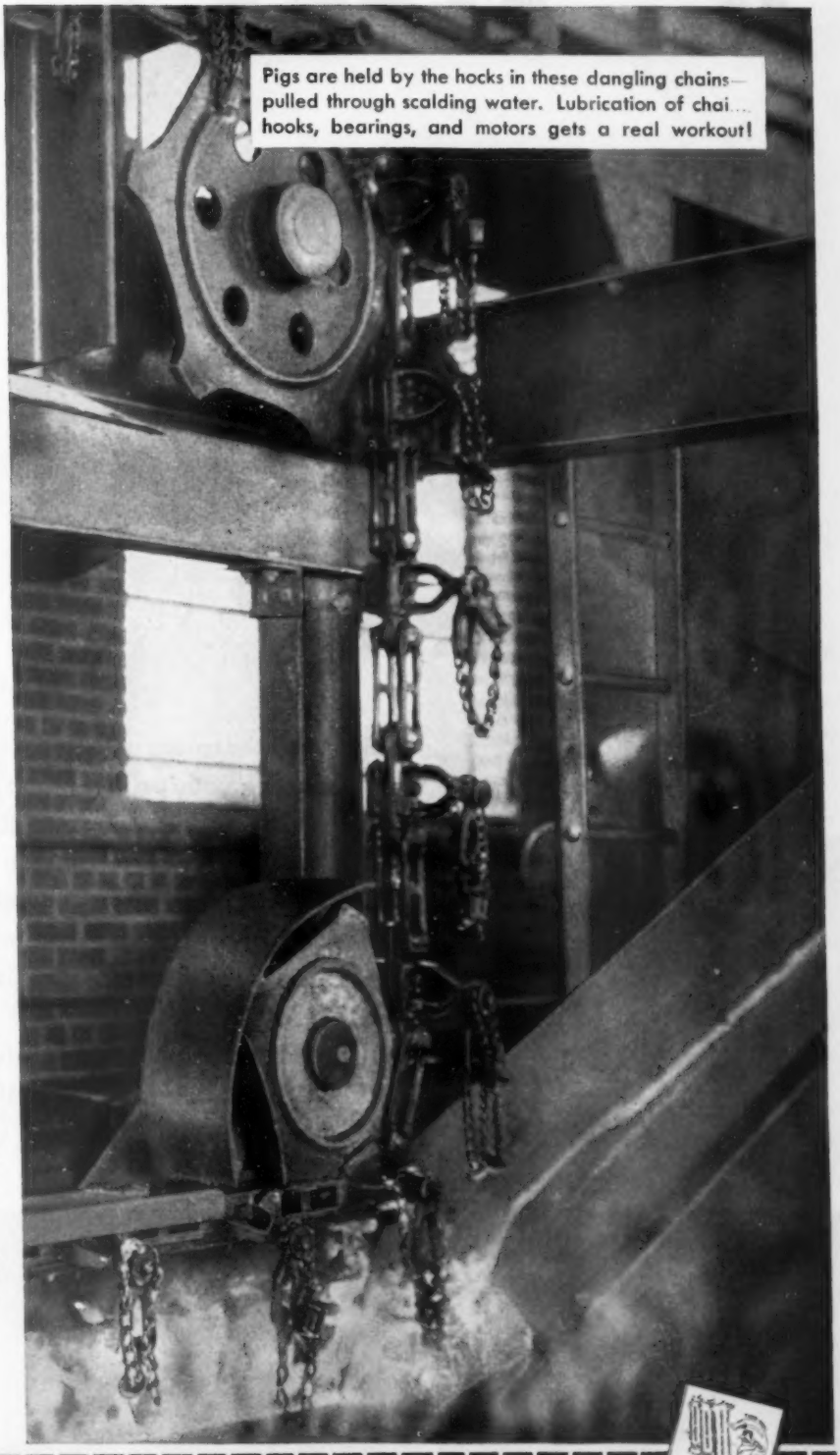
In meat packing plants, as in many others, POCO HTB Grease is widely used with outstanding success as a general purpose lubricant. High film strength and adhesiveness over a wide range of temperature and moisture conditions make this possible.

POCO HTB is one of a group of Pure Oil multi-purpose industrial lubricants that you can turn to advantage to simplify your lubrication practice—and reduce your lubricants inventory.

Find out more about this versatile compact line of oils and greases designed to do so many jobs equally well. In most plants no more than six lubricants are needed to do the entire lubrication job with complete success. By reducing the number of lubricants used in your plant to six or less, you can slash application costs, minimize waste and error.

Tear out that coupon now and mail it today. You'll get full details on how to start a new labor-saving, money-saving, lubrication program in your plant.

KEEP IT PURE, AND SIMPLE!


Pigs are held by the hocks in these dangling chains—
pulled through scalding water. Lubrication of chai...
hooks, bearings, and motors gets a real workout!

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PURE OIL INDUSTRIAL LUBRICANTS

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Use ALCOA facilities

for *Quality*

Near you, there are Alcoa fabricating facilities capable of producing your product—large or small—of aluminum or magnesium—to your specifications. Impartial to process, Alcoa is interested only in making your product of the highest quality at the lowest cost.

You can count on prompt quotations. And, most important, you'll benefit from the full 65 years' experience Alcoa has gained working aluminum. You have only to call your local Alcoa sales engineer to start these facilities working for you. His office is listed under "Aluminum" in your classified telephone directory.

CASTINGS—Sand, permanent mold, plaster and die. All are held to close tolerances to reduce finishing operations, therefore, to lower per piece costs. Alcoa® Castings have dimensional stability, won't creep or grow even at elevated temperatures.

CASTINGS FORGINGS EXTRUSIONS or SCREW MACHINE PRODUCTS

Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

Aluminum Caps and Seal
Richmond, Ind.

Aluminum Die Castings
Chicago, Ill.; Garwood, N. J.

Aluminum Extruded Shapes
Cressona, Pa.; Los Angeles, Calif.; New Kensington, Pa.; Lafayette, Ind.

Aluminum Forgings
Cleveland, Ohio; Los Angeles, Calif.

Aluminum Impact Extrusions
Edgewater, N. J.

Aluminum Sand and Permanent Mold Castings
Bridgeport, Conn.; Cleveland, Ohio; Detroit, Mich.; Los Angeles, Calif.

Jobbing Products
New Kensington, Pa.

Magnesium Die Castings
Garwood, N. J.

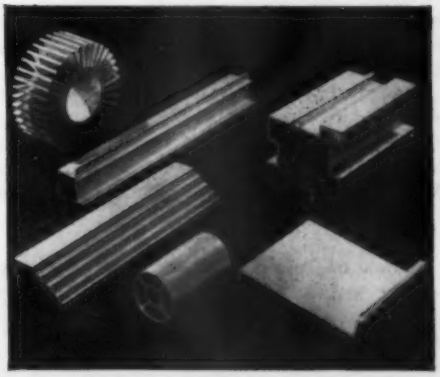
Magnesium Extruded Shapes
New Kensington, Pa.

Magnesium Forgings
Cleveland, Ohio; Los Angeles, Calif.

Magnesium Permanent Mold Castings
Los Angeles, Calif.; Cleveland, Ohio

Magnesium Sand Castings
Buffalo, N. Y.; Los Angeles, Calif.

EXTRUDED SHAPES—New 14,000-ton press extrusion recently installed at Lafayette, Indiana, along with 49 other presses, reproduces your design ideas in aluminum. Extruded shapes require few assembly operations.

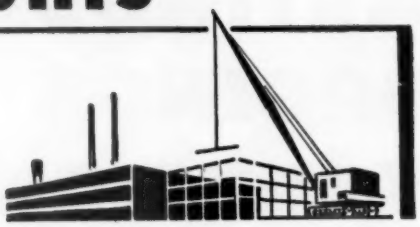


FORGINGS—15,000-ton forging press in operation at Alcoa's Cleveland, Ohio, plant. Aluminum and magnesium forgings by all processes—upset, press and drop hammer. Alcoa Forgings are of uniform quality, give best combination of lightness, strength, compactness producing high strength-weight ratios.

SCREW MACHINE PRODUCTS—Turret lathes, single and multiple-spindle automatics handling all types of rod, bar and tubing up to 3½ inches in diameter. Complete facilities under one roof for secondary operations such as drilling, tapping, assembling and finishing.

IMPACT EXTRUSIONS—Practically any round, square, rectangular, oblong, cup or shell-shaped pieces can be made by this method at less cost than by drawing, stamping, spinning or machining. It is possible to achieve strength characteristics comparable to 1020 steel with little or no secondary machining.

INDUSTRIAL Developments



Because of a constantly growing business—greater sales and greater production—**Tyer Rubber Company** has expanded its plant facilities with a modern wing of 40,000 sq. ft. at its Andover, Mass., location. The new wing, which will contain the most modern of equipment, will have a completely equipped laboratory and an enlarged roll covering production area. It will be equipped with full-area travelling cranes of 20-ton capacity.

Tyer Rubber produces such products as molded and extruded industrial rubber parts; rubber covered rolls for textile, leather, paper and other industries; druggists sundries and sports items. A large part of the output of the Tyer plant in Andover is in canvas and rubber footwear—casual shoes, tennis, basketball and other sports shoes as well as fishing boots, rubbers, overshoes and gaiters.

Yale & Towne Manufacturing Company, New York, has purchased the Powdered Metal Products Corporation of America, Franklin Park, Ill.

Last summer Yale & Towne acquired the American Sintered Alloys Company of Bethel, Conn., and thus now has eastern and midwestern plants to manufacture and sell powdered metal products.

Controlling interest in the Norma-Hoffman Bearings Corp., Stamford, Conn., has been purchased by the **Universal American Corp., New York City.**

Norma-Hoffman will continue to operate as a separate company with no change in officer personnel.

The formation of **Instrof Corporation** to manufacture and sell a completely fabricated system of flattened expanded steel trough and fittings for the continuous support of instrument tubing, has been announced. The new organization will locate its offices and plant at 4923 Pentridge St., Philadelphia 43, Pa.

A new operation in the production of copper cakes which will result in greater economy and increased output by fabricating mills has been assured by the opening of a new copper casting plant in Perth Amboy, N. J., by the **Anaconda Copper Mining Company.**

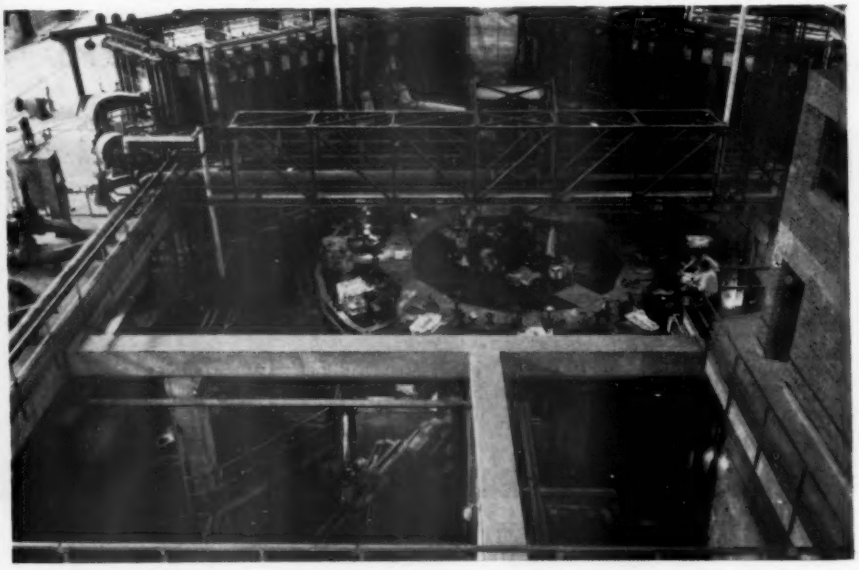
Previously, wedge-shaped copper cakes weighing approximately 800 pounds had been supplied. The new plant will turn out parallel-sided cakes weighing from 1,800 to 3,000 pounds. This will enable plants, such as the American Brass Company, another Anaconda subsidiary, to run longer coils of sheet thereby reducing customers' "set-up" time and providing for more efficient and rapid handling of fabrication.

A casting wheel with 12 moulds is used to produce the cakes. It takes about two minutes to pour a cake and when the cake is taken off the wheel, it moves up a conveyor belt to an inspection table.

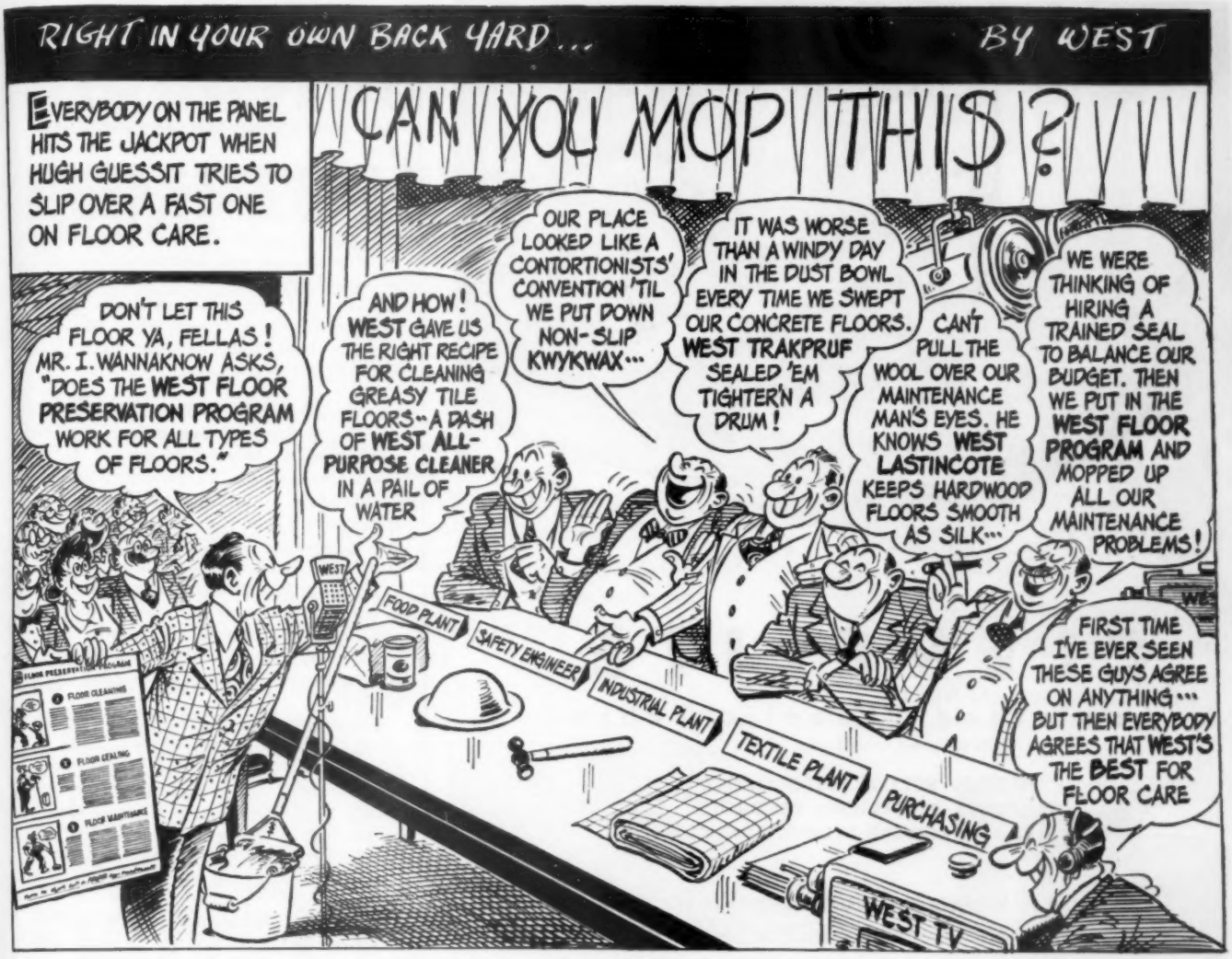
In addition to two new special furnaces, the new plant also relies on three anode furnaces, three refining furnaces and four billet furnaces for casting.

The two new furnaces are oil-fired and are the result of considerable research. They are capable of producing electrolytic copper cakes of 99.95 plus copper content.

Special moulds, cooling devices, and handling methods were also developed to produce the heavier, parallel-sided cakes.



A view of the new furnace in the plant of the Anaconda Copper Mining Company plant at Perth Amboy, N. J. The furnace turns out copper cakes of 1800 to 3000 pounds each compared with the 800 pound cakes turned out by other furnaces.


RIGHT IN YOUR OWN BACK YARD... BY WEST
EVERYBODY ON THE PANEL HITS THE JACKPOT WHEN HUGH GUESSIT TRIES TO SLIP OVER A FAST ONE ON FLOOR CARE.
CAN YOU MOP THIS?
DON'T LET THIS FLOOR YA, FELLAS! MR. I. WANNAKNOW ASKS, "DOES THE WEST FLOOR PRESERVATION PROGRAM WORK FOR ALL TYPES OF FLOORS."
AND HOW! WEST GAVE US THE RIGHT RECIPE FOR CLEANING GREASY TILE FLOORS--A DASH OF WEST ALL-PURPOSE CLEANER IN A PAIL OF WATER
OUR PLACE LOOKED LIKE A CONTORTIONISTS' CONVENTION 'TIL WE PUT DOWN NON-SLIP KWYKWAX...
IT WAS WORSE THAN A WINDY DAY IN THE DUST BOWL EVERY TIME WE SWEPT OUR CONCRETE FLOORS. WEST TRAKPRUF SEALED 'EM TIGHTER'N A DRUM!
CAN'T PULL THE WOOL OVER OUR MAINTENANCE MAN'S EYES. HE KNOWS WEST LASTINCOTE KEEPS HARDWOOD FLOORS SMOOTH AS SILK...
WE WERE THINKING OF HIRING A TRAINED SEAL TO BALANCE OUR BUDGET. THEN WE PUT IN THE WEST FLOOR PROGRAM AND MOPPED UP ALL OUR MAINTENANCE PROBLEMS!
FIRST TIME I'VE EVER SEEN THESE GUYS AGREE ON ANYTHING... BUT THEN EVERYBODY AGREES THAT WEST'S THE BEST FOR FLOOR CARE
FOOD PLANT
SAFETY ENGINEER
INDUSTRIAL PLANT
TEXTILE PLANT
PURCHASING
WEST TV

New floors cost $300,000,000 *a year!*

TYPE OF FLOOR	INSTALLED COST* OF 50,000 SQ. FT.
Asphalt Tile	$15,000
Concrete	18,000
Linoleum	21,000
Hardwood	27,500
Cork	39,000
Rubber Tile	44,000
Vinyl Tile	44,000
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Terrazzo & Mosaic	87,500
Marble	150,000

*Based on reports of reliable flooring contractors in urban areas.

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But, your floors *don't have* to wear out. They can be protected almost indefinitely.

How? With West's simple, proven FLOOR PRESERVATION PLAN. (1) *Cleaning* — remove all dirt without harming floors (2) *Sealing* — fill the pores. Provide a protective coating (3) *Maintaining* — put on a tough, anti-slip floor wax.

The West Plan offers you more than 20 proven products. A West Floor Specialist will be glad to help you select the program or product you need.

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ENSURES BETTER PERFORMANCE IN
COUNTLESS ELECTRICAL PRODUCTS . . .
AND . . . LOWERS PRODUCTION COSTS.

Clevelite is known the world over for its moisture resistance, dimensional stability, high dielectric strength, low loss and great physical strength. It meets the most exacting specifications.

Proven applications include . . . armature shaft spacers, insulators and brush holders; relay stack insulators and spacers, rectifiers, and as the outer casing on mercury contact relays, as well as replacements for other materials in tubular form.

Available in diameters wall thicknesses, and lengths as desired.

Why pay more? For the best . . . Call CLEVELAND!

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• All-Fibre Cans • Combination Metal and Paper Cans
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SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
Cleveland Container Canada, Ltd., Prescott, Ontario • Offices in Toronto and Montreal

The need for additional operating facilities and storage space to handle its growing sales volume and product diversification has been solved by the acquisition of the Van Wert, Ohio, plant of Sterling Electric Motors, Inc., by **Aeroquip Corporation, Jackson, Michigan.**

The newly acquired plant, with 45,000 square feet, offers highly efficient operating facilities which will lower handling charges and permit improved flow of materials as well as enable Aeroquip to consolidate different warehouse locations into one easily controlled unit. The company is transferring its Sheboygan operations to the new Van Wert plant.

A major step in modernizing and expanding production facilities of **American Steel & Wire Division of U. S. Steel Corporation, Cleveland,** has been undertaken with the proposed construction of a new rod mill located on the properties of the firm's present Cuyahoga Works.

The new facilities, which will include a combination rod mill, billet storage area, and rod storage area, will have a rated capacity of 450,000 tons per year compared to the present 313,000 tons per year.

Electronic and the latest automatic controls will be used, extensively, in the heating, working and cooling processes in the new mill. Steel billets which must be heated before being rolled into rods will be conveyed through a huge furnace divided into multiple heat zones with closely controlled temperatures.

The new facilities will handle billets weighing 1,050 pounds as against the 600 pound billets presently used.

Alloy Rods Company, York, Pa., has undertaken a major expansion program with construction of a new plant on the West Coast and the doubling of the company's plant facilities in York.

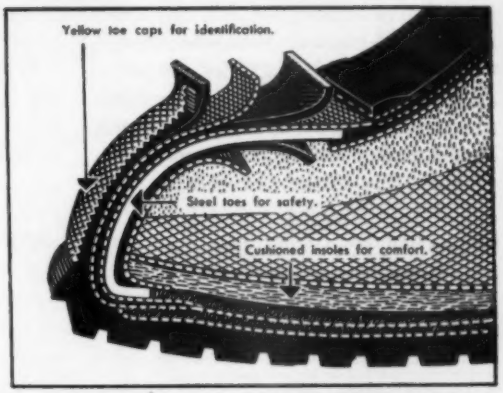
The new plant, to be known as the Pacific Coast Division, will be located in El Segundo, Calif., and will produce a complete line of alloy arc welding electrodes for the Pacific Coast and Rocky Mountain states. It is expected to be in operation by October 1.

Federal Electric Products Company, a Delaware corporation with headquarters in Newark, N. J., and **Pacific Electric Manufacturing Corporation,** a California corporation with executive offices in San Francisco, have merged to form a nationwide electrical manufacturing organization with plants in New Jersey, California, Connecticut, Missouri, Texas, New York, Ohio, Indiana, and Pennsylvania.

The merger knits together two major manufacturers of electrical equipment with Federal Electric's products primarily of the low voltage type for industrial and home installations and Pacific Electric's of the high voltage type for long-distance transmission of electrical power.

INDUSTRIAL SAFETY FOOTWEAR COMPENSATION CLAIMS!

There's a "U. S." boot for almost every job you do—no matter how specialized your work. And "U. S." has "engineered" its industrial footwear line to give you comfort, fit and maximum protection everytime! Special "U. S." Features: You'll want to work in. U. S. NEOPRENE RUBBER is compounded especially to withstand the harmful effects of chemicals, oils, and acids. STEEL TOES built for safety when handling loads. BAR-FLEX SOLES with cleats prevent sag under your weight—give arch support and foot comfort for all-day standing!



STEEL TOES WITHSTAND 2,000 POUNDS PRESSURE
This tough steel guard engineered by "U. S." has protected many feet from injury.

US ROYAL FOOTWEAR

U. S. ROYAL WORK SHOES—The boot that's built like a fine shoe. Made of tough tempered rubber. Special "U. S." features. Steel arch shanks and Shockproof Insoles for standing comfort. Also available in plain toes.

NEW BAR-FLEX DAIRY BOOT—The white, non-marking sole helps keep dairy floors spotless. BAR-FLEX soles insure foot comfort and arch support.

NEW NEOPRENE DAIRY BOOTS—Of handsome maroon rubber, these 12-inch high boots are easy-on-and-off, have snug-leg comfort, strap top. Gray anti-slip cleated soles and heels for safety. For standing comfort, "Shockproof" Cushion Insoles.

NEW HIGH-CUT RUBBERS—The high-cut rubbers that pull on, and fit close. Extra height gives extra protection. Available in acid and oil resisting NEOPRENE rubber, or tough tempered rubber. Anti-slip soles.

R U B B E R C O M P A N Y

ROCKEFELLER CENTER, NEW YORK

BUSINESS IN MOTION

To our Colleagues in American Business . . .

A national enterprise of long experience, such as Revere, inevitably accumulates a great deal of information, not only about its own products, but about other companies, their products, facilities and skills. Some of this data naturally is confidential, and is respected as such, but often it can be made available, with mutual advantage. Here are some examples.

• A Revere customer asked for advice about expanding copper tube. We recommended a change in size, and referred the company to a firm we knew had both the necessary equipment, and the know-how. Result: business for the three of us.

• A manufacturer had on his drawing boards a new product, a milk cooler. Having benefited by our collaboration in the past, he brought us into the picture, so that we were able to work closely with his engineers. Our knowledge of baffling led to a suggestion that increased efficiency by 30%, used no more material, and also eliminated soldering.

• When a product is in a highly competitive field, cost reduction can have a vital influence on sales and profits. The maker of a baby stroller asked Revere what could be done to cut costs of aluminum tube without affecting quality of the stroller. Changes in alloy and gauge were recommended, and proved effective in every way. Revere now sells this manufacturer less aluminum per stroller, but has gained the respect and orders of a growing company.

• Tuning condensers for radios usually have aluminum plates, stamped from strip that has to be held to close standards as to gauge and flatness. A condenser firm thought well enough of Revere to place a trial 500-pound order. Both the Sales Department and the Technical Advisory Service followed through, ascertaining the individual requirements of the company, and interpreting them in the light of mill techniques and previous experience in this field. The trial shipment was so satisfactory that a large production order was placed.

• A most competent manufacturer told Revere he had been working for two years on an aluminum brazing problem. It wasn't an easy problem to solve, as we found out when we dug into it, but we licked it in three weeks. After all, Revere began making aluminum mill products in 1922, and through all the years since has been adding to its knowledge of the metal.

• A fabricator took a contract to make soap dishes, a new kind of work to him. He had been told by his customer that each dish should be annealed twice. The Technical Advisory Service worked closely with him, set up specifications for temper and gauge, and stimulated new thinking on tool design. On two dishes, annealing was eliminated; on another, only one anneal is required. These are but a few cases from the Revere files. Many other suppliers of materials of all kinds can match them. You may not buy metals, but such things as wood, paint, felt, chemicals, cement; no matter. Whatever you purchase, it will pay you well to take advantage of the special knowledge and skill of the firms with which your purchasing department is in contact.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N. Y.

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

A plant to produce a new platinum-containing catalyst for use in reforming petroleum is being constructed by **Baker & Co., Inc.**, a member of the Engelhard Industries group, in Newark, N. J.

The plant, which will start operating in 1954, will be of brick and concrete, provide 58,000 square feet in a single story, be completely air-conditioned, and represents an investment of $2,500,000.

The catalyst to be produced is the result of joint research by Sinclair Research Laboratories, Inc., and the laboratories of Baker & Co. It will be known as Sinclair-Baker Catalyst RD-150.

Among its many advantages are higher reformate yields at all octane levels, reduced hydrocracking, and a longer catalyst life.

Laminating equipment to produce a general line of aluminum, paper, plastic, synthetic rubber and cloth facings for fiber glass for insulation has been put into operation at the **Fiber Glass Division, Libbey-Owens-Ford Glass Company, Parkersburg, W. Va.**

Libbey-Owens-Ford will manufacture the aluminum-faced fiber glass in three thicknesses of foil (.0025, .001, .0007 inches) and any thickness of fiber glass up to two inches. In addition it will manufacture a variety of paper faced fiber glass for insulation including kraft paper laminated with asphalt, reinforced with textile fiber glass, and in several weights and piles. Lamination of film facings include vinyl and saran in clear, black and aluminum pigmented, and neoprene spray coating. Glass cloth and other cloth may also be laminated to the blanket type fiber glass on the same equipment.

Feedall Machine and Engineering Company, designers and builders of automatic hopper feeders and similar special selector devices, has recently moved to their new plant at 38399 Pelton Road, Willoughby, Ohio.

The American Ventilating Hose Company, a division of Callahan Zinc-Lead Company, Inc., New York, is changing its name to the Flexaust Company.

Two unusual testing machines for use in research on minimizing the occurence of railroad freight car hot boxes have been completed by **Armour Research Foundation of Illinois Institute of Technology, Chicago.**

The two year project, sponsored by the Association of American Railroads was developed to learn the basic principles involved in bearing operations, limitations of present bearing design features and materials, and practical means for improving bearing performance.

The research group is also trying to determine whether a hot box detector is feasible without requiring installations on cars.

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STOPS RUST!

Resists Rain, Snow, Heat, Fumes, Weathering, Salt Water, etc.

Rust-Oleum *saves* preparation, *saves* manhours! Just scrape and wirebrush to remove rust scale and loose particles . . . then brush Rust-Oleum 769 Damp-Proof Red Primer *directly over the sound rusted surface*. Rust-Oleum finish coatings in many colors, aluminum, and white provide *double protection*. Specify Rust-Oleum for new construction, maintenance, or re-modeling. Prompt delivery from Industrial Distributor stocks in principal cities.

RUST-OLEUM CORPORATION
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FREE SURVEY: Ask a Rust-Oleum specialist to conduct a survey including actual applications, tests, and recommendations. No cost or obligation. See Sweets for nearest Rust-Oleum distributor or write for literature today.

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Distinctive as your fingerprint, Rust-Oleum is an *exclusive formula* created and developed by a Master Mariner during more than 20 years of battling actual rust-producing conditions at sea.

It incorporates a specially-processed fish oil vehicle that will *dry*, is odor-free, and is formulated in many *colors, aluminum,* and *white*. Specify genuine Rust-Oleum. Accept no substitute.

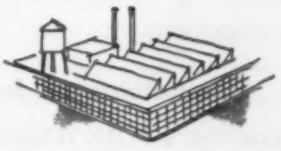
Practical, economical answer to your rust problems . . .

Sandblasting, chemical pre-cleaning and other costly preparations are not usually required as Rust-Oleum 769 Damp-Proof Red Primer may be applied *directly over sound rusted surfaces* after scraping and wirebrushing to remove rust scale and loose particles.

Brush, dip, or spray—available in many colors . . .

Beautify . . . as you protect with Rust-Oleum finish coatings available in a wide variety of colors. They incorporate the same basic rust-inhibiting vehicles and provide greater compatibility and *double protection.*

Proved throughout industry for over 25 years . . .



Leading companies throughout the world, in nearly every type of industry, have proved Rust-Oleum's capacity to resist rain, sun, snow, heat, fumes, salt water and salt spray, many acids and chemicals.

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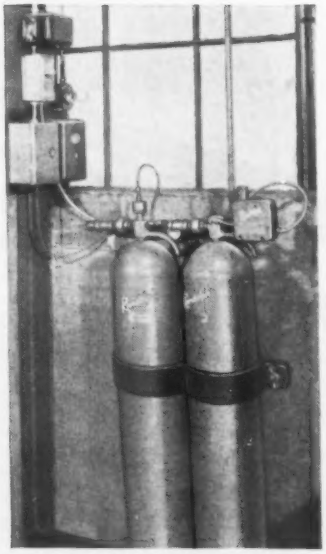
- ☐ Nearest Source of Supply

AUTO-LITE INSTALLS RANDOLPH AUTOMATIC FIRE KILLING SYSTEM

A dip tank with conveyor and bake oven operation at the Auto-Lite plant in Bay City, Michigan, presented an unusual and worrisome fire hazard until solved by Randolph fire-prevention specialists. The Randolph automatic electric system shown, not only detects and extinguishes any fire that might occur in the unit, but also sounds the alarm and shuts down the conveyor.



Twin Randolph CO_2 Cylinders deliver 100 pounds of powerful Carbon Dioxide in less than 20 seconds.

Kills Fire, Sounds Alarm and Shuts Down Machinery

As in the Auto-Lite installation, Randolph Systems, in addition to automatically killing the toughest fires in split seconds, can also be equipped with duct and door closers, motor, fan and machinery shut-offs, warning alarms and other auxiliary safety devices. Systems are designed for both local application or total room flooding and are ideal for dip tanks, baking ovens, spray booths and hundreds of other applications.

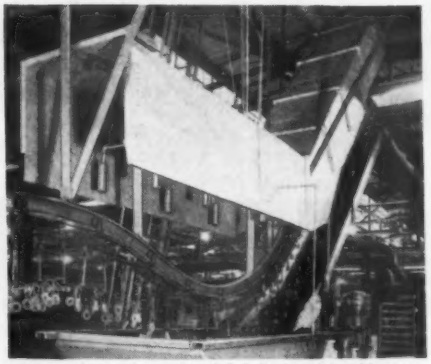


Photo above shows Randolph Extinguisher Nozzles spaced for complete coverage of dip tank and conveyor hazard.

Free Catalog and Engineering Service Available Without Cost

Randolph's FIRE HAZARD INDEX gives correct equipment and methods for protection against 590 typical fire hazards. Write for your free copy today. Address: Randolph Laboratories, Inc., 2 E. Kinzie St., Chicago 11, Ill.

The manufacture of new standard tanks for storage of materials at atmospheric or low pressures has been announced by the Jobbing Division of the **Aluminum Corporation of America.**

With this move, raw tank materials will be stockpiled and delivery time may be cut up to 80 per cent. Previously all tanks were tailor-made to customer specifications with materials ordered as needed.

Standard tanks can be had in capacities ranging from 5800 to 16,400 gallons and are of both horizontal and vertical types.

All these tanks can be equipped with a 20-inch manhole, either of the fixed or swing type. The hinged cover can take no internal pressure and is not vapor proof while the fixed type can take some pressure.

No gage pressures have been announced as the position of the tank, horizontal or vertical, and weight of contents must be known before gage pressures can be figured.

Worthington Corporation, Harrison, N. J., has revealed plans to expand and modernize its manufacturing program at its Plainfield works.

By 1954, Worthington will have expanded its facilities to increase its production of construction equipment, positioning machines and industrial mixers by one-third.

Plans call for the construction of a new building for the assembly of the firm's large products.

American Cyanamid Company, Calco Chemical Division, Bound Brook, N. J., will construct a 14 million dollar titanium dioxide plant on the outskirts of Savannah, Ga.

It will be completed in early 1955 and will occupy a 1,600 acre tract of land on the south shore of the Savannah River. The new plant will be Calco's third facility for titanium dioxide production and represents American Cyanamid's 43rd plant.

Titanium dioxide is marketed by Cyanamid under the trade name Unitane, and is the whitest of all pigments.

The International Resistance Company, Philadelphia, has started construction of a plant in Boone, N. C.

It will be situated on a 20 acre tract and will be of modern red brick, steel and concrete construction.

Various types of power wire wound and precision resistors used extensively in radios, television sets, radar, special type fuses, electrical appliances and numerous other electronic and electrical devices will be produced in the new plant which is scheduled to be completed by January 1, 1954.

The directors of the **White Motor Co., Cleveland,** have approved an agreement to acquire the Autocar Co., Ardmore, Pa.

The purchased company will be operated as the Autocar Division of the White Motor Co. with Autocar's personnel continuing in their present posts.

SPANG® CW steel pipe helps protect the quality of *Avon* cosmetics

Owner and General Contractor: **Consolidated Realty Investments, Inc., a Ben J. Massell enterprise, Atlanta, Georgia**

Architect: **H. A. Rawlins, Atlanta, Georgia**

Heating Contractor: **Art Plumbing Company, Atlanta, Georgia**

This new, beautiful combination office-and-warehouse in Atlanta, Georgia, is the southeastern distribution point for top quality cosmetics, perfumes and men's fine toiletries produced by Avon Products, Inc. Modern in every respect, Avon's new building was designed for comfort, efficiency and attractiveness.

Cosmetic products are perishable and call for great care in storage. One of the requirements of the new building was a heating system that would provide maximum heat distribution to protect the many types of products in the warehouse from atmospheric damage and low temperatures. Spang CW Steel Pipe was installed to provide lines for the heating system throughout the 62,400-sq. ft. building.

Like the products it serves, Spang CW Steel Pipe is a quality product . . . made on the most modern machines from high-grade skelp, controlled and inspected constantly throughout production and thoroughly tested before shipment. This care in manufacture assures customers of a reliable and high-standard pipe, easy to cut, thread and bend . . . for use in steam, water, gas and air lines and many specialized applications. That's why owners, architects, engineers and contractors who want a quality product specify Spang CW.

Next time you order pipe, tell your local Spang Distributor you want Spang quality-controlled CW Pipe. You'll be glad you did.

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General Sales Office: Pittsburgh 30, Pa. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis.

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The Kaiser Gypsum Company, Inc., is constructing a $4,000,000 gypsum board plant and plaster mill in Seattle.

The new plant, the only one of its kind within 800 miles of the Puget Sound area, will have a production capacity of 100,000,000 square feet of gypsum board products for the building industry in Washington, Oregon, Idaho, and Alaska.

It will be constructed on a nine and one-half acre site on East Marginal Way with access to the Duwamish Waterway for unloading of gypsum ore ships.

The plant will include five main buildings and several auxiliary buildings of steel and concrete and will be equipped with modern, specially-built machinery. It will produce all types of gypsum wallboards, lath and exterior sheathing, and hardwall and special type plasters.

The plant is scheduled to be in operation by December 1954.

The new $8,000,000 electrolytic chlorine and caustic soda plant at the Calvert City, Ky., works of the **Pennsylvania Salt Manufacturing Company** is now in production.

The new DeNora electrolytic cells have been charged with brine made from Louisiana salt and activated with TVA power and are producing chlorine and high purity, high strength caustic soda. Chlorine and hydrogen from the cells are being combined in the new anhydrous hydrogen unit and deliveries of the basic chemicals have started.

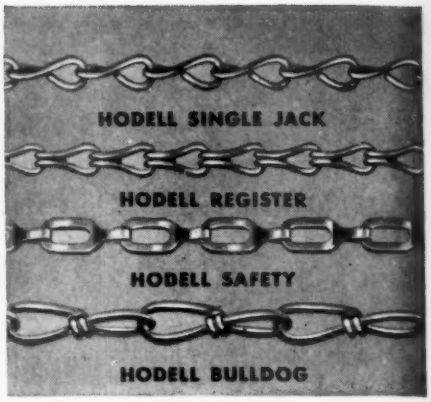
The new plant is the largest single expansion project undertaken by Pennsalt and is part of a $12,000,000 program which also includes construction of a synthetic ammonia unit at the company's Wyandotte, Mich., works. Principal buildings are the cell room; the rectifier and switchgear building; the chlorine compression and liquefaction unit; and the anhydrous hydrogen chloride unit.

Miscellaneous construction includes a change house, storehouse, extensions to the plant maintenance shop, administration building and laboratory, and other service buildings. A multiple cell dock, consisting of five steel, concrete-capped cells, was constructed on the Tennessee River to serve the plant for barge shipments. Railroad spurs were constructed connecting the plant with the Illinois Central Railroad.

Speedways Conveyors, Buffalo, N. Y., manufacturers of materials handling equipment, has moved into a new location providing 50,000 square feet at 202-208 Rhode Island Street.

The new location, which provides twice as much space as the previous plant, will allow for the doubling of production and speedier shipping of products.

In addition to the production of Speedway's gravity conveyors and belt conveyors, the firm plans to add more items to their line.



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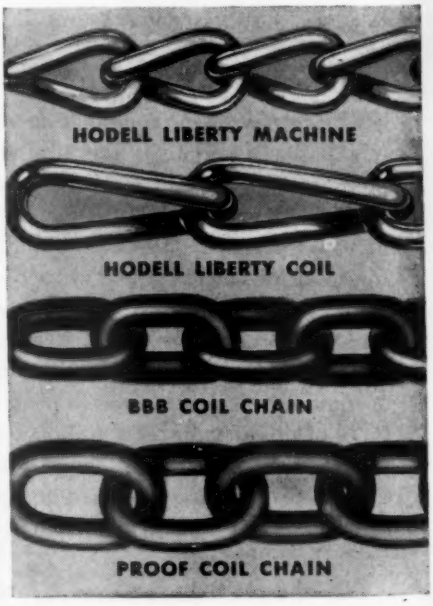
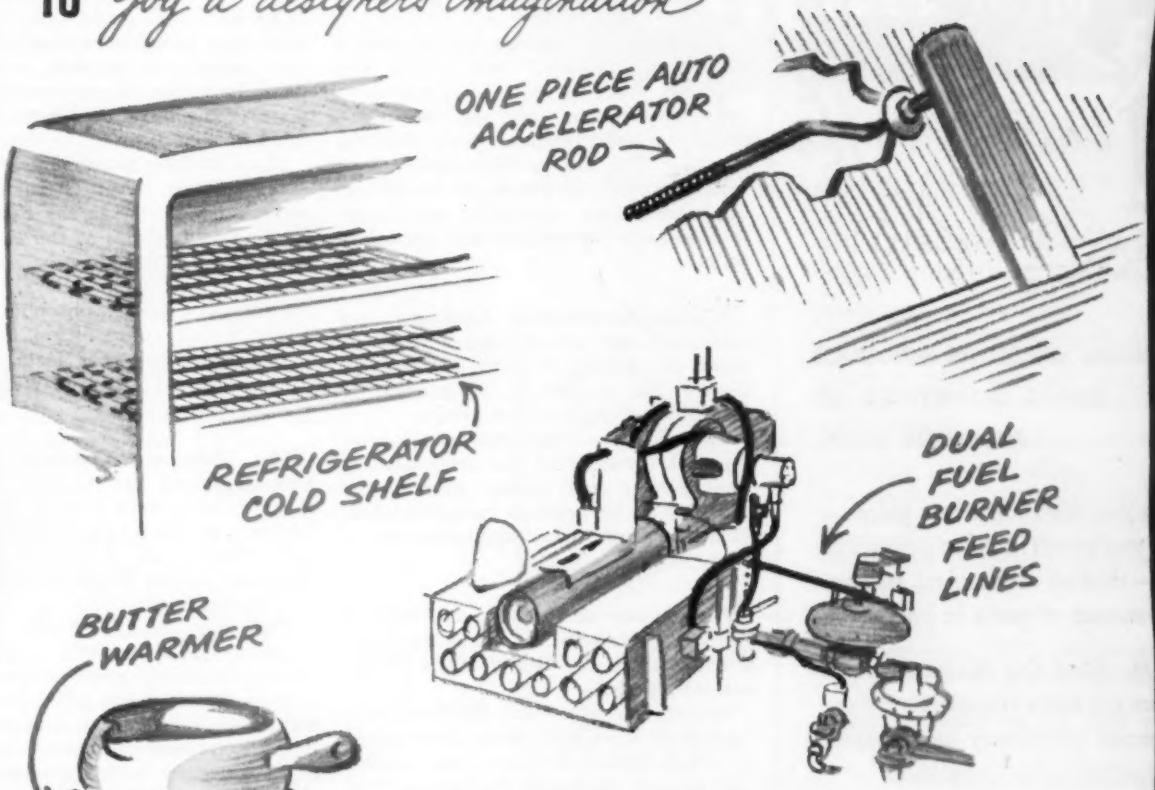
in standard types . . . or specialties

Hodell makes a quality line of dependable chain for every industrial use and can make many formed wire specialties. Or, if you need a special chain assembly, Hodell can manufacture it to your specifications. We welcome an opportunity to quote on your needs at any time. Send for the Hodell Industrial Catalog . . . giving full information on the complete Hodell line.

HODELL CHAIN COMPANY
Cleveland 3, Ohio
Div. of The National Screw & Mfg. Company



FROM *the Bundy Sketchbook*
TO *jog a designer's imagination*



REMARKS Give your ideas a cost-saving twist -- with Bundyweld Tubing. The very standard of dependability, it's helped beat many design, fabrication problems. Add: Bundy's unmatched fabricating, specialized engineering.

WRITE today for Bundyweld catalog or for help in developing your tubing application ideas.

BUNDY TUBING COMPANY, DETROIT 14, MICH.

Bundyweld Tubing

® DOUBLE-WALLED FROM A SINGLE STRIP

Leakproof
High thermal conductivity
High bursting point
High endurance limit
Extra-strong
Shock-resistant
Ductile

Lightweight
Machines easily
Takes plastic coating
Scale-free
Bright and clean
No inside bead
Uniform I.D., O.D.

WHY BUNDYWELD IS BETTER TUBING

Bundyweld starts as a single strip of copper-coated steel. Then it's . . . continuously rolled twice around laterally into a tube of uniform thickness, and passed through a furnace. Copper coating fuses with steel. Result . . . Bundyweld, double-walled and brazed through 360° of wall contact.

← **NOTE** the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

Bundy Tubing Distributors and Representatives: *Cambridge 42, Mass.:* Austin-Hastings Co., Inc., 226 Binney St. • *Chattanooga 2, Tenn.:* Poirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • *Chicago 32, Ill.:* Lapham-Hickey Co., 3333 W. 47th Place • *Elizabeth, New Jersey:* A. B. Murray Co., Inc., Post Office Box 476 • *Philadelphia 3, Penn.:* Rutan & Co., 1717 Sansom St. • *San Francisco 10, Calif.:* Pacific Metals Co., Ltd., 3100 19th St. • *Seattle 4, Wash.:* Eagle Metals Co., 4755 First Ave. South *Toronto 5, Ontario, Canada:* Alloy Metal Sales, Ltd., 181 Fleet St., E. • **Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.**

STAMPINGS

PILOT RUNS

SPECIAL METHODS PRODUCE SMALL QUANTITIES AT MINIMUM COST.

When you need just a few pieces — when you're still in the experimental stage—then an economical, cooperative source of parts is important.

Our **Machine-Cut Method** avoids custom die costs completely by use of special machinery which skillfully fashions pilot quantities.

Careful calculation determines the point at which labor costs warrant our **Short Run Method,** which uses simple contour dies and special purpose presses.

Best of all, when you get into large quantities on the experimental part, our STAMPINGS DIVISION is still your most economical producer, using our **Production Method.** Thus all three methods are at your disposal. And impartial choice of method *saves money* for you!

Send for Informative Literature

STAMPINGS DIVISION

LAMINATED SHIM COMPANY, INC.

2409 Union Street, Glenbrook, Conn.

The increased demand for styrene with resistance to normal wear and tear has resulted in a decision by **Monsanto Chemical Company** to increase the production capacity of its Springfield, Mass., plant for tough, high-impact styrene by 30,000,000 pounds a year.

Monsanto in announcing the plant expansion, indicated that within the next five years the bulk of all new styrene applications will be manufactured in the tougher, more durable material. The shift to high-impact styrene is already noticable in household appliances, toys, packaging and large molded parts for refrigerators and other units.

Electro Metallurgical Company has increased the furnace capacity of its plant in Alloy, W. Va., which will double the company's production of medium-carbon ferromanganese.

The alloy is widely used for the economical production of high-quality steels having good surface characteristics such as low-carbon rimming steels of the automotive and appliance industries.

An addition of 70,000 square feet to the West Elizabeth, Pa., plant has been announced by the **Detroit Steel Products Company.**

Initially the plant will turn out only light-gage steel roof deck panels, but in a few weeks wall and floor panels will also be produced. Full production of all panel shapes is expected by the beginning of October. The West Elizabeth plant, which has been completely constructed of the panels it will produce, will increase the total productive capacity of the company by nearly 10%.

Dollin Corporation, Irvington, N. J., a major producer of zinc and aluminum die-castings, recently broke ground for an addition to their plant which will provide a 60 to 75% increase in total production capacity.

The new building, which will be of modern brick and glass construction, will be attached to the firm's present building and will be completed shortly.

A giant press, employing a hydraulic ram capable of exerting pressures of 2,000 tons, has been installed in the plant of the **Riverside Metal Company, Riverside, N. J.**

The extrusion press, which was built in Dusseldorf, West Germany, represents a major step in the expansion of production facilities at the New Jersey mill. It will be used in producing a wide range of specialty alloys, including beryllium copper, phosphor bronze, silver, nickel, cupro nickel, and others.

The new press was installed under the guidance of a team of West German engineers.

The **Mathieson Chemical Corporation, Baltimore,** has recently completed the first large-scale plant in the United States to produce hydrazine, the chemical brought out of obscurity by the Germans during World War II for use as a rocket fuel.

The new plant, located at Lake Charles, Louisiana, will produce hydrazine both for military purposes as well as a wide range of promising new industrial applications such as life-saving drugs, insecticides, soldering fluxes, plant growth retardants, plastics, synthetic fibers and foam rubber.

Discovered over 60 years ago in Germany, hydrazine was little more than a laboratory curiosity selling at $50 a pound prior to World War II. The price has decreased and the anticipated opening, early this year, of the Lake Charles plant has established the pound price at $2.50.

Hydrazine is a clear, water-like liquid composed of nitrogen and hydrogen and is made from ammonia.

BY TRAIN, NOT PLANE: A new flatcar with dual sets of trucks support the gigantic 200 ton weight of a steel column for an 8,000 ton forging press being built by the New Castle, Pa., plant of the United Engineering and Foundry Company for the United States Air Force. This column, which is 52 feet long, 7 feet wide and 9 feet high, is the first of 25 large castings being cast for the Air Force's heavy press program. In addition to the 8,000 ton forging press, United is also building a 35,000 ton forging press and a 12,000 ton extrusion press.

Production of high carbon spring wire by the **Colorado Fuel and Iron Corporation** will be raised by nearly 12,000 tons annually through the addition of new machinery in the Buffalo, N. Y. plant of CF&I's Wickwire, Spencer Steel Division.

Two modern continuous wire-drawing machines, embodying the latest engineering developments, will substantially increase the plant's output of hard-drawn spring wire for use in the automotive, mechanical, bedding, and furniture spring industries.

Continuing a policy of expansion and diversification of its products, **Oliver United Filters Inc., Oakland, Calif.,** has acquired the manufacturing, sales and service rights for the Centriclone which was formerly owned by Equipment Engineers, Inc., San Francisco.

The Centriclone is a unique combination of the conventional liquid cyclone and the centrifuge for separating solid particles of different sizes and specific gravities when suspended in a liquid slurry.

Extensive interest and application for the Centriclone is indicated as a result of installations in the cement, metallurgical and chemical industries.

A robot system that's 10 times faster and two to five times more accurate than previous systems in monitoring critical temperatures during uranium rolling operations, has been developed by the Philadelphia Industrial Division of **Minneapolis-Honeywell Regulator Company.**

The new system, the heart of which is a radiation detection device that literally "sees the heat", is the first ever devised to automatically supervise this vital phase of production rolling of uranium ingots. The system has been installed in the recently opened uranium mill built by Birdsboro Steel Foundry & Machine Co., Fernald, Ohio. The automatic monitoring is similar to systems developed by the company for use in steel mills to determine the temperature of processed steel.

The construction of a half-million dollar plant for the production of propellor fan blades, blower wheels, spring coiling machines and auxiliary mill machinery has been announced by the **Torrington Manufacturing Co., Torrington, Conn.**

The single-story facility, providing 46,125 square feet of additional floor space, will be completed before the end of 1953 and represents the firm's 15th major expansion since 1900.

A company official pointed out that the new construction program was made essential by "constantly growing demands for air impellers by the nation's cooling, heating and ventilating appliance manufacturers".

The Torrington Company has additional manufacturing facilities in Van Nuys, Calif., and Oakville, Ontario.

SHIMS

BRING YOUR SHIM PROBLEMS TO "SHIM HEADQUARTERS"

ONLY LAMINATED SHIM COMPANY OFFERS YOU ALL FIVE SOLUTIONS:

THE LAMINUM* SHIM

SIMPLY PEELS FOR ADJUSTMENT
Made up of from 3 to 63 layers of .002 or .003 inch brass or steel, metallically bonded together over their entire surfaces. No dirt between layers. Peels with penknife.

THE LAMISOL* SHIM

FOR QUICK, ASSEMBLY LINE USE
The laminations of the LAMISOL Shim (in brass only) are temporarily joined by spot-soldering on the edges. Gauges and number of laminations within one shim are unlimited.

THE LAMITAB* SHIM

FOR SUPER SPEED, THIN GAUGE SITUATIONS
The little tab holds shim laminations together firmly, yet is easily removed. Different metals can be used in the same shim.

THE LOOSE LEAF SHIM

FOR UNLIMITED FLEXIBILITY
This is the simplest of all custom-stamped shims. It is completely flexible. Usually sets including several different gauges are made up.

PACKAGED SHIM STOCK

READY FOR EASY USE, WITHOUT WASTE
Thin gauge 6" x 100" rolls feed through package slots. Heavier gauges in flat envelopes. Available from your Industrial Distributor.

*T.M. Applied For]

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SHIM HEADQUARTERS SINCE 1913

Check Our Stampings Division For Your Stamped Parts Requirements

USE COUPON for more information

MAIL TODAY!

LAMINATED SHIM COMPANY, INC.
2409 UNION STREET, GLENBROOK, CONN.

Please send me more information on:

☐ SHIMS ☐ STAMPINGS ☐ BOTH

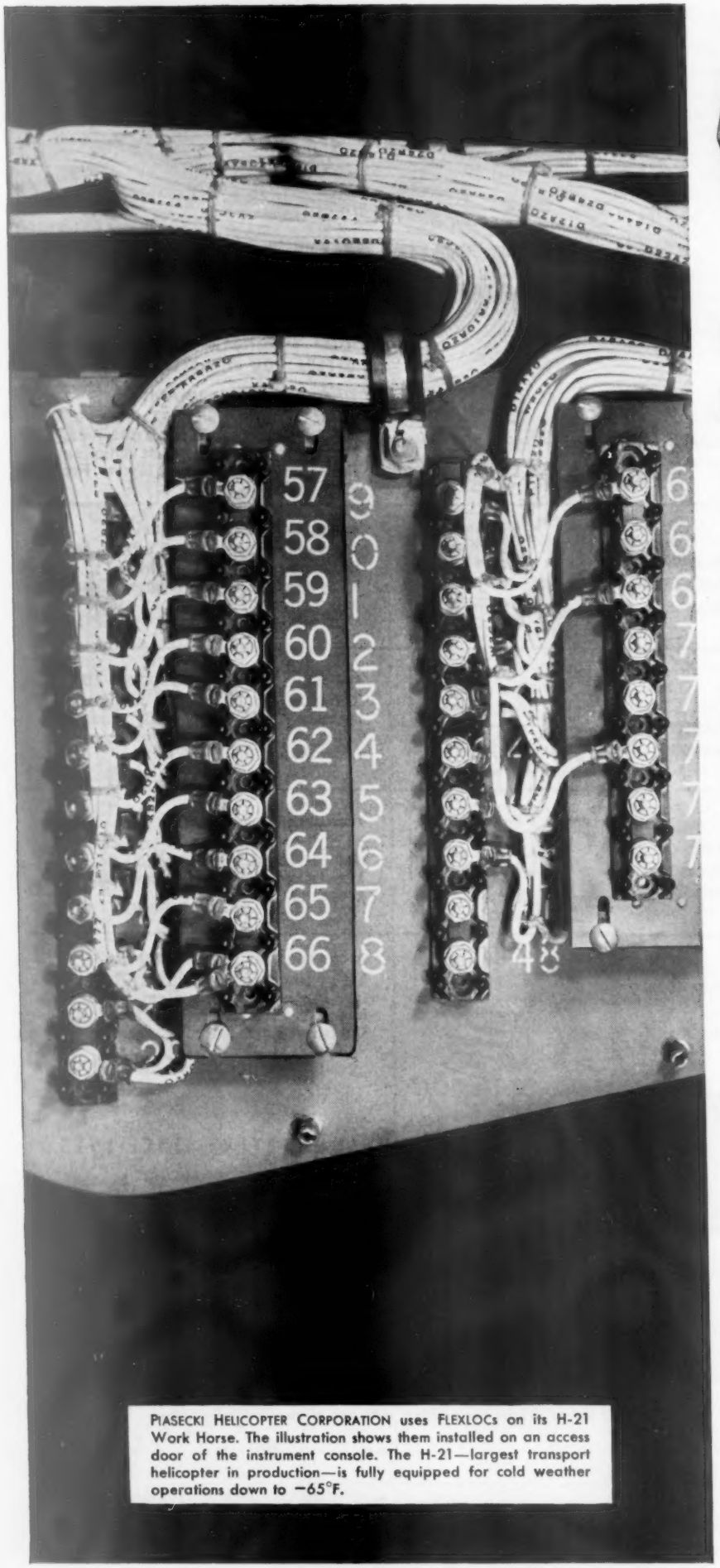
☐ *We'd like to discuss our problem with one of your Sales Engineers.*

NAME _____ TITLE _____

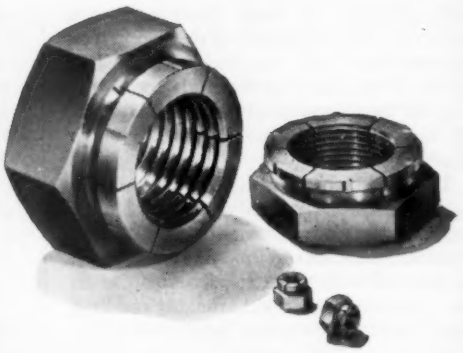
COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____



PIASECKI HELICOPTER CORPORATION uses FLEXLOCs on its H-21 Work Horse. The illustration shows them installed on an access door of the instrument console. The H-21—largest transport helicopter in production—is fully equipped for cold weather operations down to −65°F.



Why use FLEXLOC locknuts?

The answer is simple. They hold assemblies together, and won't work loose like ordinary nuts. Once you install these one piece, all metal nuts, you can forget them. Yet they can be easily removed and can be reused again and again.

No fastening job is too tough for a FLEXLOC. Whether it's on an access door of a Piasecki Helicopter or the picker stick of a high speed loom, a FLEXLOC stays put.

FLEXLOCs save production and maintenance time. They are one piece, all metal—nothing to assemble, come apart, lose or forget. Standard FLEXLOCs have higher tensile than most other nuts—and because they are all metal, are not affected by temperatures to 550°F.

SPS can deliver any quantity of FLEXLOCs in a wide range of sizes. Stocks are carried by industrial distributors. Write for literature and samples. SPS, Jenkintown 31, Pa.

FLEXLOC®

LOCKNUT DIVISION

SPS

JENKINTOWN PENNSYLVANIA

Our Fiftieth Year : A START FOR THE FUTURE

...with TYCOL lubricants on hand!

A Cutting Oil with a "Delicate" Touch! Screw threading to fine tolerances is the acid test of any cutting oil . . . one reason why we ask: can your present oil measure up to Tycol Angrove 40? Take the customer who was threading ⅜" standard threads on 303 Stainless . . . with thread extending to the head . . . and the overall job calling for an extremely fine finish. The best of the competitive oils used yielded only 600 pieces before serration and burring appeared, necessitating regrinding the chaser. Tycol Angrove 40 produced some 4,500 pieces with no defects apparent under magnification . . . and with no regrinding of the chaser throughout the entire run! If you can't top this – contact your local Tide Water Associated office for further information!

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INDUSTRIAL LUBRICANTS

Boston • Charlotte, N. C. • Pittsburgh
Philadelphia • Chicago • Detroit
Tulsa • Cleveland • San Francisco
Toronto, Canada

Over 300 Tycol industrial lubricants are at your disposal . . . engineered to fit the job!

TIDE WATER ASSOCIATED OIL COMPANY
17 BATTERY PLACE · NEW YORK 4, N. Y.

REFINERS AND MARKETERS OF VEEDOL . . . THE WORLD'S MOST FAMOUS MOTOR OIL

✓ check the price

✓ check the analysis

✓ check the performance

and you'll specify

MUELLER BRASS CO.

tuf-stuf®

aluminum bronze

check the price—TUF-STUF, the Mueller Brass Co. series of aluminum bronze alloys, can be supplied at prices below those of similar alloys. Whether you buy TUF-STUF in rod shapes, forgings or screw machine products you'll save money because these alloys are priced right, machine better and last longer.

check the analysis—TUF-STUF alloys are a high copper base series containing from 9% to 13% aluminum and varying amounts of iron, nickel and manganese. They do not contain zinc and, therefore, are not subject to dezincification. TUF-STUF alloys are available in several grades with a chemical composition, suitable hardness and mechanical properties for many different applications.

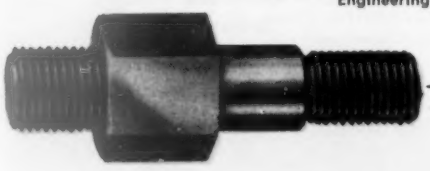
check the performance—TUF-STUF alloys are light and strong—about 8% lighter than cast bronze and almost as strong as steel. They have a low coefficient of friction as well as good bearing and mechanical properties. They not only retain these properties but resist oxidation at the high speeds and high temperatures of modern production equipment. They will withstand strong acid attack or the effects of brackish waters and are highly resistant to corrosion.

These alloys can be hot-forged into relatively intricate shapes . . . need little or no machining . . . and the smooth, bright surfaces eliminate costly finishing.

MUELLER BRASS CO.

PORT HURON 21, MICHIGAN

For complete information, write today for our new TUF-STUF Engineering Manual.



NEWS OF YOUR SUPPLIERS

The Chase Bag Company, Chicago, Ill., has appointed three new regional sales directors.

The Western regional sales director is J. A. Brewster, Portland branch manager. The Western region will represent territories and offices now responsible to the Portland and Los Angeles offices.

J. H. Counce, manager of the New Orleans branch, will be Southern regional sales director represented by Dallas, New Orleans and Orlando offices.

The manager of the Philadelphia branch, J. P. Grady, has been assigned to the Eastern region which consists of Buffalo, New York, Philadelphia and Richmond.

R. V. Bennett has been appointed sales manager of the Electrical Division of **Olin Industries, Inc., New Haven, Conn.**

Mr. Bennett, who will headquarter in New Haven, joined the Electrical Division in 1936 and formerly was with the Ray-O-Vac Company.

E. H. Schoonmaker has been appointed district manager of the St. Louis, Mo., office for the Eddystone Division of **Baldwin-Lima-Hamilton Corp., Philadelphia, Pa.**

Continental Can Company, New York, has announced the appointment of F. Guild Devere as products sales manager for Decoware.

Robert T. Shiels, Jr., has been named district manager in the Dallas territory for **Anaconda Wire & Cable Co., New York.**

Jim Lord and Ray Galenbeck have been assigned to Anaconda's Chicago and Seattle offices as salesmen.

U. S. Stoneware Co., Akron, Ohio, has named Kenneth L. Bullock as assistant sales manager of Process Equipment Division.

General Ceramics & Steatite Corp., Keasbey, N. J., has appointed Gerald E. Mortensen as office sales coordinator for the Greater New York territory.

Mr. Mortensen was previously associated with the General Cable Corporation.

Dearborn Chemical Co., Chicago, Ill., has moved its Eastern Division from New York City to 1601 Linden Avenue East, Linden, N. J.

Jack S. Lee has been named district sales manager of **Continental Can Company's** paper container sales office in Cleveland and Frederick O. Horne has been appointed district sales manager of the company's Southwest district paper container sales office at Dallas.

Wherever you're located

YOU CAN GET WALDES TRUARC RINGS IN A MATTER OF HOURS

...and whatever you make, there's a Waldes Truarc Ring designed to save you material, machining and labor costs:

basic types

BASIC

#5000 *(internal)*

#5100 *(external)*

Tapered design principle permits rings to maintain constant circularity and pressure against bottom of groove.

INVERTED

#5008 *(internal)*

#5108 *(external)*

Inverted construction provides uniform protruding shoulders while maintaining constant circularity when installed in groove.

for taking up end-play

BOWED

#5001 *(internal)*

#5101 *(external)*

Bowed construction permits resilient take-up of end-play.

BEVELED

#5002 *(internal)*

#5102 *(external)*

Beveled construction permits rigid take-up of end-play.

for radial assembly

E-RING

#5133
#5131 *(bowed)*

Radially applied. Provides large shoulder on small shaft diameter. Bowed version provides take-up of end-play.

CRESCENT

#5103 *(external)*

Applied radially over shaft. Secure against impact and vibration.

INTERLOCKING

#5107 *(external)*

Two-piece ring applied radially. Secure against extremely high r.p.m.'s and heavy thrusts.

self-locking types

CIRCULAR SELF-LOCKING

#5005 *(internal)*

#5105 *(external)*

Installed axially. Requires no groove. Recommended for permanent assemblies exposed to relatively moderate thrusts, impacts or vibrational loading.

TRIANGULAR SELF-LOCKING

#5305 *(external)*

Low cost retainer. Makes possible tight assemblies free of end-play on relatively soft shafts.

TRIANGULAR NUT

#5300 *(external)*

Flattens under torque. Secures equal load distribution. Replaces lock washer on screw.

GRIP-RING

#5555 *(external)*

Applied axially on shaft. Requires no groove. Exerts considerable frictional hold against axial displacement.

WALDES TRUARC®
REG. U. S. PAT. OFF.
RETAINING RINGS

Waldes Kohinoor, Inc.,
47-16 Austel Place, L.I.C. 1, N. Y.
Po95

WALDES TRUARC RETAINING RINGS AND PLIERS ARE PROTECTED BY ONE OR MORE OF THE FOLLOWING U. S. PATENTS: 2,382,947; 2,382,948; 2,416,852; 2,420,921; 2,420,341; 2,439,785; 2,441,946; 2,455,165; 2,483,300; 2,483,393; 2,487,802; 2,487,803; 2,491,306; 2,509,081 AND OTHER PATENTS PENDING

ONE OF THESE AUTHORIZED DISTRIBUTORS IS CONVENIENT TO YOU:

ALA. Birmingham, Moffatt Brgs.
ALASKA Anchorage, Bearing Eng. Co. of Alaska
ARIZ. Phoenix, E. D. Maltby Co.
ARK. Little Rock, Southern Brg. Service, Inc.
CAL. Los Angeles, Edw. D. Maltby Co., Inc.
Maywood, Edw. D. Maltby Co., Inc.
Oakland, Bearing Specialty Co.
Sacramento, Bearing Spec. Co.
San Diego, E. D. Maltby Co., Inc.
San Francisco, Bearing Spec. Co.
CANADA Lyman Tube & Brgs., Ltd.
Offices in: Montreal, Quebec; New Glasgow, Nova Scotia; Toronto, Ontario; Vancouver, British Columbia; Winnipeg, Manitoba.
COL. Denver & Pueblo, Bearings Svc. & Supply Co.
CONN. Bridgeport, Bobker Brgs.
FLA. Jacksonville, Moffatt Brgs.
GA. Atlanta, Moffatt Brgs. Co.
HAWAII Honolulu, Edw. D. Maltby Co., Inc.
IDAHO Idaho Falls, Bearings Svce. & Supply Co.
ILL. Chicago, Berry Brg. Co.
Decatur, Illinois Brg. Co.
East St. Louis, Neiman Brgs. Co.
Marion, Bearings Service Co.
Peoria, Illinois Bearing Co.
Rockford, Berry Bearing Co.
IND. Evansville, Bearings Svc.Co.
Hammond, Berry Bearing Co.
Indianapolis, Service Supply Co.
South Bend, Bearings Service Co.
IOWA Davenport, Standard Brgs.
Des Moines, Standard Brgs. Co.
Sioux City, Standard Brgs. Co.
KY. Louisville, Kentucky Ball & Roller Brg. Co.
Madisonville, Bearings Svc. Co.
LA. Baton Rouge, Dixie Brgs.
New Orleans, Dixie Brgs., Inc.
Shreveport, Bearings & Trans. Co.
MD. Baltimore, Moffatt Brgs.Co.
MASS. Boston, Bearings Spec.Co.
MICH. Detroit, Michigan Brg.Co.
MINN. Minneapolis, Industrial Supply Co.
MO. St. Louis, Neiman Brgs. Co
N.J. Clifton, Bobker Brgs., Inc.
Highland Park, Bobker Brg. Co.
Jersey City, Bobker Brgs., Inc.
Newark, Bobker Brg Co., Inc.
Trenton, Moffatt Bearings Co.
N.Y. Buffalo, Syracuse Brg.Corp.
L. I. City, Bobker Brgs., Inc.
New York City, Bobker Brgs., Inc.
Niagara Falls, Syracuse Brg.Corp.
Rochester, Syracuse Bearing Co.
Syracuse, Syracuse Bearing Co.
Troy, Bearing Distributors
Utica, Syracuse Bearing Corp.
N.C. Charlotte, Moffatt Brgs.Co.
Greensboro, Tennesse Brgs., Inc.
OHIO Akron, Ohio Ball Brg. Co.
Canton, Ohio Ball Bearing Co.
Cincinnati, Ohio Ball Bearing Co.
Cleveland, Ohio Ball Bearing Co.
Columbus, Ohio Ball Bearing Co.
Dayton, Ohio Ball Bearing Co.
Elyria, Ohio Ball Bearing Co.
Hamilton, Ohio Ball Bearing Co.
Lima, Ohio Ball Bearing Co.
Mansfield, Ohio Ball Bearing Co.
Toledo, Ohio Ball Bearing Co.
Youngstown, Ohio Ball Brg. Co.
Zanesville, Ohio Ball Brg. Co.
ORE. Eugene & Portland, The General Tool Co.
PA. Erie, Pennsylvania Brgs.
Johnstown, Pennsylvania Brgs.
Philadelphia, Moffatt Brgs. Co.
Pittsburgh, Pennsylvania Brgs.
York, Pennsylvania Bearings, Inc.
TENN. Kingsport, Tennessee Brgs., Inc.
Knoxville, Tennessee Brgs., Inc.
Memphis, Southern Bearing Svc., Inc.
UTAH Salt Lake City, Bearings Service & Supply Co.
VA. Richmond, Moffatt Brgs. Co.
WASH. Seattle, Bearing Engineering & Supply Co.
Yakima, Yakima Bearing Co.
W. VA. Charleston, West Va. Bearings, Inc.
Huntington, West Va. Brgs., Inc.
Wheeling, West Va. Brgs., Inc.
WIS. Appleton & Milwaukee Wisconsin Bearing Co.

Factory engineering representatives available in each area.

Rubber Television Anode Shield Manufactured by Continental for the Ucinite Company

Behind your television screen . . .

Continental Rubber gets into the act

In the unseen act behind your television screen, a small cup-shaped rubber shield plays an important role. This shield fits over the anode on the side of the tube. Its function is to "seal in" high voltage current and thus prevent surface discharges that cause picture distortion.

Ordinary rubber compounds, of course, can't fill the bill. *This* rubber part must have exceptional dielectric properties and unusual stability under sustained heat. It must resist the deteriorating effects of ozone created by electrical discharges. In addition, the rubber shield must be precision molded to insure proper seating against the side of the television tube.

Continental engineers, working closely with Ucinite Company engineers, have met these exacting requirements. This technical cooperation typifies the service in rubber offered by Continental.

When *you* need better engineered rubber parts, why not enlist the service of specialists in molded and extruded rubber?

LET US SEND YOU THIS CATALOG

This new engineering catalog lists hundreds of standard grommets, bushings, rings and extruded shapes. It will be a valuable addition to your working file. Send for your copy today or . . .

See our Catalog in Sweet's File for Product Designers

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CONTINENTAL
RUBBER WORKS

BRANCHES

Baltimore, Md.	Cleveland, Ohio	Kansas City, Mo.	Pittsburgh, Pa.
Boston, Mass.	Dayton, Ohio	Los Angeles, Calif.	Rochester, N. Y.
Buffalo, N. Y.	Detroit, Mich.	Memphis, Tenn.	St. Louis, Mo.
Chicago, Ill.	Hartford, Conn.	New York, N. Y.	San Francisco, Calif.
Cincinnati, Ohio	Indianapolis, Ind.	Philadelphia, Pa.	Syracuse, N. Y.

The appointment of Arnold Jensen as manager of **General Electric** Conduit Standard Lines Sales has been announced by the company's Construction Materials Conduit Department, Bridgeport, Conn.

Mr. Jensen, who joined GE in 1935, has been with the Construction Materials Division during his entire service with the company except for duty with the United States Navy.

J. R. Johnstone has been named manager of Carbon Products Sales Department of National Carbon Company,

J. R. Johnstone

a division of **Union Carbide and Carbon Corporation, New York.**

Silas S. Cathcart has been named manager of the Plastics Department, **Shakeproof Division, Illinois Tool Works, Chicago.**

Mr. Cathcart, who joined Shakeproof five years ago, will be suceeded by Leroy L. Rysell as manager of customer service.

Clark L. Richards has been named sales manager for thermosetting molding materials of **Monsanto Chemical Company's** Plastics Division, Springfield, Mass.

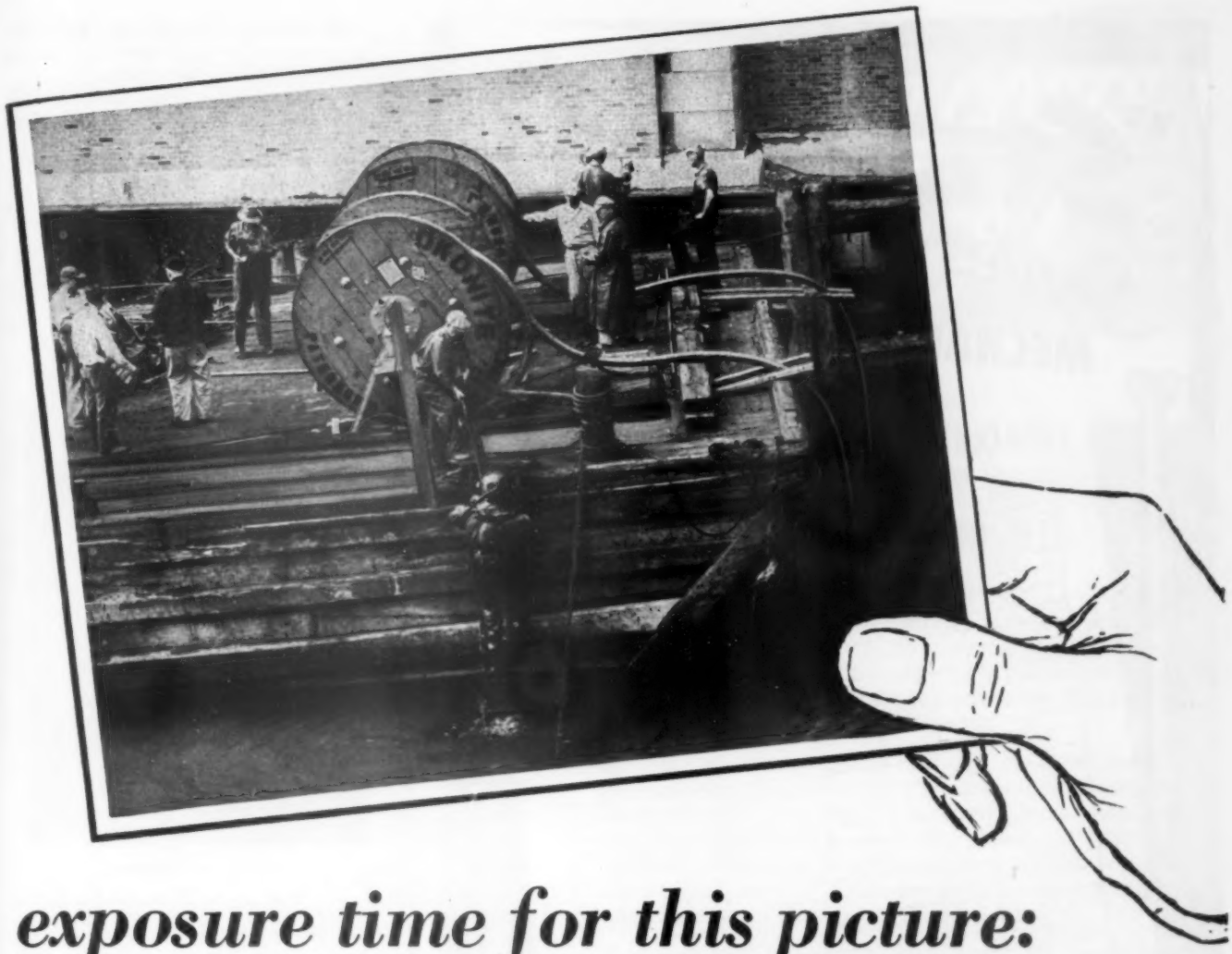
At the same time, Joshua S. Miller has been promoted to assistant manager under Mr. Richards.

Earl J. Phillips has been appointed district manager for the new sales office in Chicago of **Sterling Electric Motors, Inc., Los Angeles.**

W. F. Mulvaney, sales manager of **Bemis Bros. Bag Company's** multiwall paper bag plant at Peoria, has been appointed supervisor of multiwall paper bag sales for the entire Bemis organization. He succeeds C. W. Akin, who has been made assistant director of sales for the company.

R. L. Baker, Jr., formerly assistant sales manager, has been named to succeed Mr. Mulvaney at Peoria.

Mr. Akin former assistant, K. W. Koechig, has been named as supervisor of small paper bag sales for Bemis.



exposure time for this picture:

75 years

It took 75 years of Okonite research, engineering, and on-the-job experience to make this picture possible. For a submarine cable typifies Okonite's unusual skills in making insulated cables.

During the past 75 years Okonite has made many pioneering contributions to this type of cable in its gradual evolution to today's position of "watertight integrity." Okonite installed the first 69,000-volt, paper-insulated, lead-sheathed submarine cable in 1928 at Deepwater, Delaware. This company also made the first 132,000-volt, pipe-type submarine cable, which crosses the Hudson River at Newburgh, N. Y.

Perhaps the highest achievement in this industrial art is the now famous "Bonneville Cable," installed in 1951 in Puget Sound. This record-size cable has taken its place alongside 18 other Okonite submarine cables now operating in the Puget Sound area, some of which were installed over 25 years ago.

Since 1878, Okonite's one concern has been to make longer-lived cables. Over these years Okonite research has yielded an unusually high number of new materials, processes and techniques. They were confirmed first by Okonite's advanced testing procedures, and second, by the even more exacting test of service experience. The Okonite Company, Passaic, New Jersey.

OKONITE SINCE 1878 *insulated cables*

1642

"Standard"

Serves Manufacturers Who Use All Shapes and Sizes of

MECHANICAL STEEL TUBING

SIZE AND THICKNESS CHART

of Electric Weld Tubing for Mechanical Use

TUBE DIAMETER "O.D. SIZE	MAXIMUM WALL		MINIMUM WALL	
	DECIMAL	B. W. GAUGE	DECIMAL	B. W. GAUGE
1/2"	.065"	16	.028"	22
5/8"	.065"	16	.028"	22
3/4"	.065"	16	.028"	22
7/8"	.083"	14	.028"	22
1"	.109"	12	.028"	22
1-1/8"	.109"	12	.028"	22
1-1/4"	.134"	10	.028"	22
1-3/8"	.134"	10	.028"	22
1-1/2"	.148"	9	.035"	20
1-5/8"	.148"	9	.035"	20
1-3/4"	.148"	9	.035"	20
1-7/8"	.165"	8	.035"	20
2"	.165"	8	.035"	20
2-1/4"	.180"	7	.035"	20
2-1/2"	.203"	6	.035"	20
2-3/4"	.203"	6	.049"	20
3"	.220"	5	.049"	18
3-1/4"	.220"	5	.049"	18
3-1/2"	.238"	4	.049"	18
3-3/4"	.238"	4	.049"	18
3-7/8"	.238"	4	.049"	18
4"	.238"	4	.049"	18
4-1/4"	.250"	3	.065"	16
4-1/2"	.250"	3	.083"	14
4-3/4"	.250"	3	.083"	14
5"	.180"	7	.083"	14
5-1/2"	.180"	7	.083"	14

*Intermediate sizes within the range indicated can also be manufactured. Please consult us for sizes not listed.

Manufacturers requiring tubing for civilian or defense production prefer "Standard's" Electric Weld Steel Tubing for many reasons! "Standard's" Electric Weld is produced in one of the most versatile and complete mills of its kind in the world. "Standard's" 33 years of specialized tubing "know-how", and monthly production of millions of feet of stainless and carbon steel tubing, in wide range of sizes and gauges, assure you of utmost satisfaction. No problem of tolerance, precision or severest application for mechanical, structural, or pressure tubing is too difficult.

STAINLESS STEEL TUBING

⅛" to 3" O.D. . . .028 to .095 wall

ABOVE CHART COVERS ROUND CARBON STEEL TUBING . . .

•

EQUIVALENT SQUARES, RECTANGULARS AND SPECIAL SHAPES ARE ALSO AVAILABLE.

Erie Resistor Corporation, Erie, Pa., has named Allen K. Shenk and Jerome D. Heibel as vice presidents.

Mr. Shenk, who joined Erie in 1942, takes over the duties of vice president in charge of sales.

Mr. Heibel, who was formerly director of research and engineering, becomes vice president in charge of research and engineering.

Jessop Steel Company, Washington, Pa., has announced the appointment of Thomas W. Gabriel as assistant vice president in charge of sales.

Thomas W. Gabriel

Mr. Gabriel has previously been associated with Firth-Sterling, Inc., and U. S. Steel Corporation.

During World War II, Mr. Gabriel served as industry advisory representative in Washington, D. C., on the NPA and OPS industry committees for both the tool steel and tungsten carbide industries.

Paul J. Leonard has been elected president of the **Wagner Manufacturing Company** in Jackson, Mo. Mr. Leonard, one of the founders of the company, was formerly vice president and managing director.

The appointments of George A. Parker as manager of the **Hercules Powder Company** explosives sales office in Pittsburgh, and Thomas E. Brown as manager in Hazelton, Pa., were announced recently.

Mr. Parker, manager of the Hercules Hazelton office since 1948, succeeds C. W. Ballard as the Pittsburgh manager while Mr. Brown, previously the assistant manager, succeeds Mr. Parker at Hazelton. Mr. Ballard was named director of sales for the Explosives Department earlier.

R. L. Schutte has been appointed sales manager of **Ahlberg Bearing Co., Chicago.**

Mr. Schutte, who has been assistant manager of sales for the past four years, joined Ahlberg in 1928.

LONGER SERVICE-LOWER COSTS FOR YOUR WIRE ROPES!

BERCO'S "GUIDE TO SELECTING WIRE ROPE" WILL HELP YOU SPECIFY THE MOST ECONOMICAL ROPE FOR EVERY NEED

For every job there is one particular wire rope that will do the work better—last longer—cost less than any other. That rope carries the right factor of safety, but no more—it offers the right amount of resistance to bending, abrasion, crushing, impact, heat, corrosion.

All these conditions can be met only when the correct grade of wire, the proper rope diameter, the most suitable construction, lay and core are specified for the particular job involved. When you specify these details correctly you will have a wire rope that will give you the best possible service with less idle equipment time during repairs or replacements and lower overall labor costs.

Berco's "Guide to Selecting Wire Rope" will enable you to specify the correct details for every job. It is a concise outline in words and drawings of the most critical points in rope specification. With its help you can make substantial savings in your wire rope costs—get longer and better service.

Return the coupon today.

CUT OFF ALONG THIS LINE

Bergen Wire Rope Company
14 Gregg Street
Lodi, New Jersey

BERCO WIRE ROPE

Gentlemen:

Kindly send me a copy of your brochure "Guide to Selecting Wire Rope."

Company_____

Address_____

_____

City_____ State_____

Signed by_____

Position_____

BERGEN WIRE ROPE COMPANY

need relays?

Potter & Brumfield is your BEST SOURCE for CUSTOM-BUILT RELAYS

here's why!

Design

Fast, accurate development of relays and small electro-mechanical assemblies to exact military or industrial specifications.

Engineering

Extensive research, laboratory and model shop facilities available to help solve design engineers' most complex relay problems.

Manufacturing

Three large, fully equipped plants geared to meet today's rigid production requirements . . . single shift capacity of 10,000 relays per day!

- Samples, Recommendations and Quotations on Request.
- P & B Sales Engineers in Principal U. S. and Canadian Cities.
- Write for Master Catalog Showing Full Line of Basic Structures.
- Standard Relays Available At Your Electronic Parts Distributor.

Potter & Brumfield

PRINCETON, INDIANA

Export: 13 E. 40th St., N. Y., N. Y.

L. B. Foster Company, suppliers of pipe, steel sheet piling and trackage, announced the establishment of a new office in Los Angeles, California, to serve the California, Arizona, Utah, Nevada, Oregon, Washington, Idaho, Montana, and Wyoming areas. Henry E. Fleishman, vice president and former general manager of the company's Chicago office, will head the new location.

The firm now maintains offices, warehouse stocks and pipe and rail fabrication facilities in Los Angeles, Pittsburgh, New York, Chicago, and Houston.

Ralph V. Quinton has been appointed metropolitan New York City and New Jersey sales representative for **J. M. Huber Corporation's Ink Division.** He will work out of the company's New York City offices.

The Edgcomb Steel Corporation, Hillside, N. J., has named John J. McGonagle as manager of steel sales. Mr. McGonagle assumes his new position after several years as an Edgecomb sales representative in Queens County, N. Y.

Gilman Paper Company, New York City, has announced the appointment of Fletcher L. Munger as Western sales manager in charge of the company's Chicago office. Mr. Munger succeeds E. A. Kendler, who is retiring after 40 years of service with the Gilman organization.

Whitney Chain Company, Hartford, Conn., has announced two new appointments in its West Coast operations.

George A. Banton has been named district manager of the company's San Francisco office and George F. Haag, a 32 year veteran, becomes West Coast consultant to A. J. Swisler, Whitney's regional manager.

Record Equipment Exhibition to Feature Safety Show

The biggest safety show on earth —the annual National Safety Congress and Exposition—will be held in Chicago, Oct. 19-23, when more than 12,000 persons from all over the world will hear 600 program participants at 200 sessions discuss all aspects of accident prevention.

The 1953 exposition will feature the largest and most comprehensive display of accident prevention equipment to be seen anywhere. All exhibit space in the Conrad Hilton Hotel will be filled with products, equipment and services relating to the promotion of safety, health, first aid, sanitation and general welfare.

Use DARNELL

CASTERS & E-Z ROLL WHEELS

Choose just the right caster or wheel for your needs from the Darnell line of nearly 4000 types. These precision made casters and wheels will help you speed up production . . . will pay for themselves many times over.

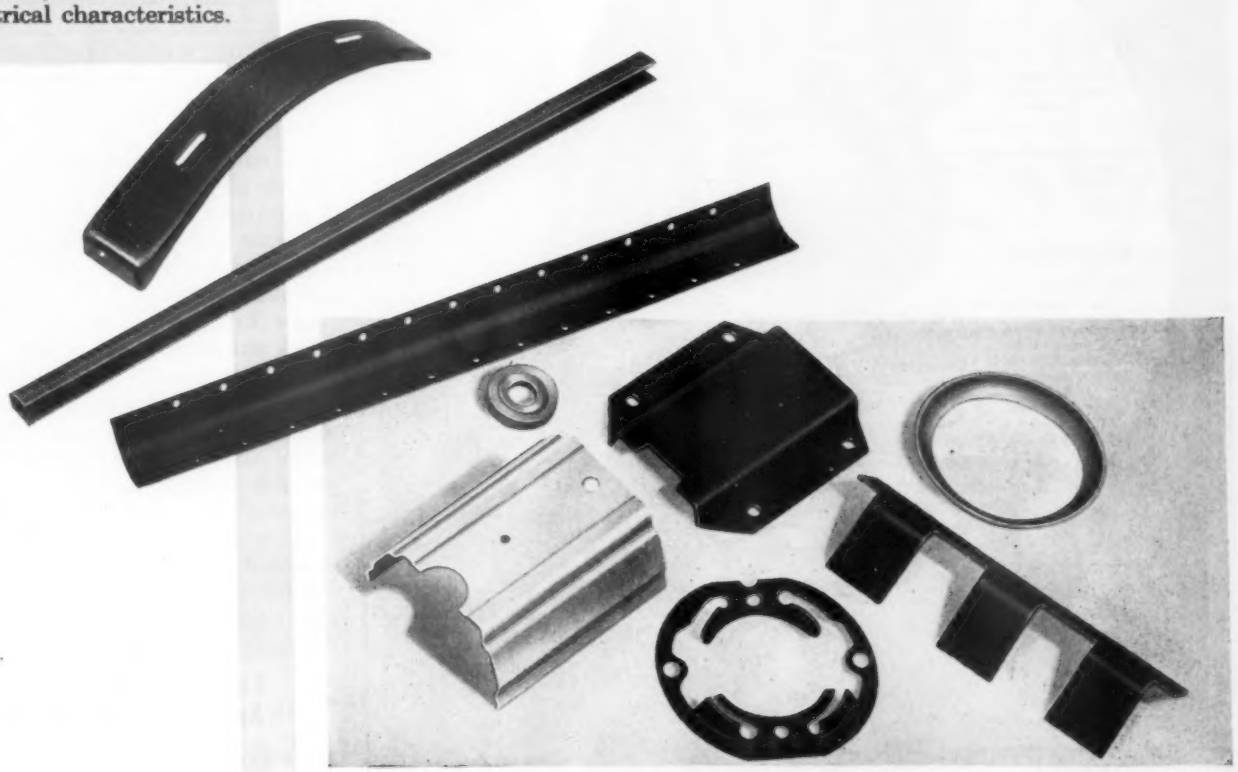
Always SWIVEL and ROLL

Free Manual

DARNELL CORPORATION, LTD.
DOWNEY (LOS ANGELES COUNTY) CALIFORNIA
60 WALKER STREET, NEW YORK 13, NEW YORK
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

TAYLOR Forming Materials are specially made for use in intricate shapes, compound curves and relatively deep draws. They are available with a wide variety of physical, mechanical and electrical characteristics.

Want to make something of them?



Make them into all kinds of panels, guards, barriers, ribs, masks, covers, ducts, containers, shields, shims or any other complicated formed part your product may require. While many grades of Taylor Vulcanized Fibre and Laminated Plastic can be formed to some degree, these four grades are ideally suited for most forming operations.

LAMINATED PLASTICS:

Grade C-7—for applications requiring toughness, resilience, mechanical strength and abrasion resistance.

Grade XX-7—for applications where mechanical strength is secondary to good electrical properties and low cost.

VULCANIZED FIBRE:

Trunk Fibre—for applications requiring good mechanical strength, toughness, abrasion resistance, surface finish and resistance to organic solvents.

Taylor Insulation—for applications requiring superior dielectric strength, toughness and abrasion resistance as well as good mechanical strength.

A Taylor Engineer will be glad to help you select the grade best suited to your forming requirements.

Let us form it for you in our Fabricated Parts Division . . . completely equipped to turn out formed and punched parts to your specifications, at the right price, with deliveries to match your production schedules.

Taylor Fibre Co., Norristown, Pennsylvania—La Verne, California

TAYLOR
Laminated Plastics
Vulcanized Fibre

Nothing is as smooth as a

HOOVER HONED RACEWAY*

Honed Raceways, exclusive Hoover Construction.
Micro-lapped Chrome Steel Balls Accuracy within .000025"
Balanced Retainers.
Husky Deep Groove. High Carbon Chrome Steel. Perfectly Balanced Raceways.
* HOOVER HONED. Hoover Honed raceways magnified 100 times as used exclusively in Hoover Ball Bearings.
POLISHED. Polished raceway surface magnified 100 times as used in other ball bearings.

HOOVER

America's only

BALL BEARING

with Honed Raceways

longer life
greater load capacity
amazing quietness

The Aristocrat *of Bearings*

HOOVER BALL AND BEARING CO.
Ann Arbor, Michigan

Timken Ends Weekend Truck Shipments As Safety Measure

Cooperation from buyers in adjusting delivery schedules is expected to help The Timken Roller Bearing Company in an unusual effort it is making to promote greater safety on the nation's highways.

Recognizing the terrible accident death toll in this country—particularly on weekends—Timken has curtailed all inbound and outbound truck traffic between its various plants between midnight, Friday, and midnight Sunday. The move affects all truck movements to customers and from suppliers. Only in extreme emergencies, when customers' production schedules would be seriously affected, are exceptions made to the rule of no weekend truck shipping.

Timken reports that it has received excellent cooperation, since starting the safety program, from its many customers and from the trucking firms that do its hauling. The company feels that if such a program were adopted by all industry, it would result in a substantial reduction in the current rate of highway accidents.

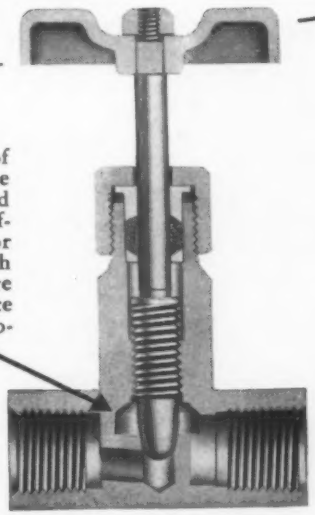
Time-Rate History of Any Action Recorded

A simple monitoring recorder that fits into the palm of a hand is announced by Alden Electronics and Impulse Recording Equipment Co., Westboro, Mass. Designed primarily to make possible the easy collection of information as to number of actions occurring over a time period, the recorder prints and stores a tape record of two separate data traces plus a timing trace. As an example it will keep track of when relays opened and closed or when they burned out; how many times the telephone was used; how long the punch press operated before it broke down, and similar records.

The actions are recorded on a ¼" electrosensitive paper tape, called Alfax, which is not affected by adverse conditions such as extreme temperature and humidity changes and is a permanent record. By merely attaching simple switches to the action to be monitored, plugging the instrument into a 110 v, a-c outlet, the information is immediately recorded on either one or both channels with a base time mark on the third. The instrument has been designed so that an unskilled person may use it in the laboratory, office or factory.

MAXIMUM WORKING PRESSURE
10,000 PSI
for water, oil or gas

- Body and stem guide extra heavy bar stock fused into one piece.
- Valve stem 416 stainless steel.
- Packing special one-piece "Marpak" moulded ring.
- Bodies marked in accordance with MSS regulations.



ONE PIECE

The stem guides of conventional needle valves are screwed into bodies—this often causes leakage or blow-outs. Marsh Needle Valves are fused into one-piece by exclusive "Conoweld" process.

Introducing-

The Ultimate in Needle Valves

Here is one of the crowning achievements of Marsh research, design, and manufacturing skill. It is the first needle throttling and shutoff valve to combine *all* of the qualities called for today in this highly critical and ever broadening field.

It is a valve that has strength and safety to spare . . . rated for pressures up to 10,000 psi—equally efficient in the lower ranges. A product of Marsh instrument-making and valve manufacturing experience, it combines instrument-like precision with the ruggedness that distinguishes all Marsh valve specialties.

The illustrations tell the story of new thinking; new standards. Body and stem-guide are machined from extra-heavy carbon steel bar stock. Still greater strength and rigidity are achieved by fusing the stem-guide into the body. The complete fusion of guide and body is accomplished by the exclusive Marsh "Conoweld" process.

There are two big advantages to this one-piece construction: (1) It eliminates the danger of unscrewing the valve from the body when opening—a frequent cause of leakage, even dangerous blow-outs (2) It permits perfect line-up of threads and seat. As a result, Marsh valves are easier to operate even at high pressures.

The precision-machined stem is 416 stainless steel. Stem threads are fine pitch for extra strength and fine, controlled regulation. Notable advancements are special "Marpak" one-piece, non-binding longer-lasting packing; deep thread chambers, keeping inlet and outlet piping away from ports and contributing excellent flow characteristics. Entire packing nut and packing gland are electro-zinc plated, preventing corrosion and giving the valve a handsome, plated exterior. The rugged malleable handle is finished in heavy baked enamel.

The new needle valve line includes globe and angle patterns with double female connections in sizes ⅛", ¼", ⅜", ½", ¾" and 1". Also globe and angle valves with male inlet and female outlet in sizes ¼" and ½". *Complete stock carried at our Skokie, Illinois factory and also at our branch plant in Houston, Texas.*

Write today for catalog giving complete details.

MARSH INSTRUMENT CO. *Sales affiliate of Jas. P. Marsh Corporation*
Dept. G Skokie, Ill.
Houston Branch Plant: 1121 Rothwell St., Sect. 15, Houston, Texas

MARSH

"THE STANDARD OF ACCURACY"

CONTROL
RAW MATERIALS
CONTROL
COMPOUNDING
CONTROL
MIXING
CONTROL
MOLDING
CONTROL
FINISHING

Visitors to ACUSHNET'S modern plant are particularly impressed by the scope and perfection of our Quality Control System. This rigid laboratory control at each stage of production is a positive safeguard in maintaining the precision for which Acushnet molded rubber parts are so widely known.

As precision starts at the expertly designed mold, control at this point is vitally important. Heats from all molds are sectionalized at least once a day and all essential dimensions of the product are measured. In addition, every two hours a full heat from every mold is checked, and certain basic dimensions selected for control purposes are checked. Particularly critical products are checked even more frequently and thoroughly.

Acushnet
PROCESS COMPANY

If your molded rubber parts call for controlled precision, you can call on ACUSHNET to meet your strictest specifications — to your complete satisfaction. Send for the "Acushnet Rubber Handbook", a comprehensive rubber data reference.

Address all communications to 770 Belleville Ave., New Bedford, Mass.

Bituminous Coal Production Up, Consumption Continues Drop

With increasing production and decreasing consumption, bituminous coal stocks on July 1 showed a gain of 3.1 million net tons over a month previous, according to figures released by the Bureau of Mines.

As of July 1, there were 76,026,000 net tons of bituminous coal in stockpiles throughout the country, as compared with 72,912,000 on June 1, with all classes of industrial consumers showing monthly gains ranging from 2.8 per cent at steel and rolling mills to 10.8 per cent at cement plants. Even the railroads gained 7.9 per cent in coal stocks. Quite the opposite was in evidence in a comparison of July 1 stocks, 1953 with 1952. With the exception of electric power plants, whose coal stocks increased more than one million tons, all other classes of industrial consumers showed lower stockpiles, the highest decrease being 30.6 per cent in the case of Class I railroads. Owing to the steel strike, stocks at steel mills and coke ovens on July 1, 1952 were higher than normal, this condition affecting the overall picture.

Castings Automatically Sealed With Liquid Synthetic Resin

A fully automatic process for sealing porous aircraft engine castings with liquid synthetic resin has been put into operation in Pratt & Whitney Aircraft branch plants at Southington and North Haven, Conn. Believed to be the first of its kind in any industry, the operation makes aluminum and magnesium castings oil-tight through vacuum-pressure impregnation of 3255 Permafil resin produced by the General Electric Company's chemical division here.

After being cleaned, jet and piston engine castings up to 80 inches in diameter are placed in 1500-gallon autoclaves under a 28-inch vacuum to eliminate air pockets. Solventless G-E 3255 Permafil is then introduced and light pressure applied for about 20 minutes. After pressure is released, castings are drained, easily washed and baked for four hours to cure the G-E Permafil to a hard infusible solid which fills every pore of the metal.

With the advent of the vacuum-pressure method, G-E 3255 Permafil was selected as the impregnating material over conventional sealants on the basis of its performance and for its ease and safety of handling.

(*Please turn to page* 316)

NOW SAVE 36% on Installation Time and Cost

with IMPERIAL Hi-Duty® TUBE FITTINGS

Furnished in Brass, Aluminum, Steel and Stainless Steel

Just Push Tube Into Fitting Without Removing Nut

The sleeve on Hi-Duty Fittings shears off during assembly and becomes permanently attached to tube. Fitting will make repeated tight reconnections.

For Tubing ⅛" to ¾" O.D.

Ask for Bulletin No. 3002

Average Time Required to Assemble Fittings

Type of Fitting	Average Time Each Joint	Joints per Hour
HI-DUTY	13.2 sec.	274
Regular Compression	20.8 sec.	173
Flare	45 sec.	80

Compared to COMPRESSION FITTINGS

Repeated, thorough tests under field conditions reveal that Imperial Hi-Duty Fittings can be assembled in an average time of 13.2 seconds . . . whereas regular compression type fittings take an average of *20.8* seconds. This is a *36%* saving in time . . . and precious labor.

Compared to FLARED FITTINGS

Here the savings in time are even more striking since it takes *45* seconds on the average to install a flare fitting compared to 13.2 for Hi-Duty . . . a saving of *71%* in time. A man can assemble better than *3* Hi-Duty Fittings in the time it takes to assemble 1 flare fitting.

Why is the HI-DUTY FITTING so much Easier and Quicker to Assemble?

Fitting furnished with integrated nut and sleeve

To get a tight joint, simply insert tube into fitting and tighten nut. No loose sleeve to drop . . . no flaring required. Makes repeated tight reconnections.

MAKES STRONGER JOINTS

Because sleeve is always in perfect alignment when joint is made and because its design minimizes deformation of tubing, Hi-Duty Fittings assure stronger joints that remain leakproof even under severe service. Tests show Hi-Duty joints will stand over 5 times as much vibration as joints made with ordinary compression or flare fittings.

See Your Industrial Supply House

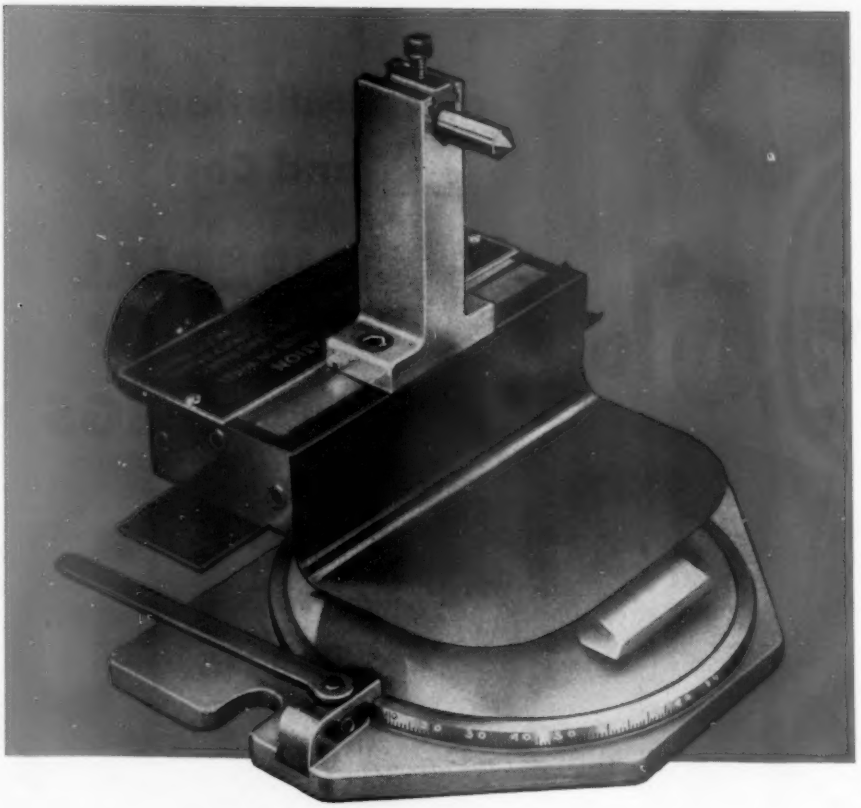
THE IMPERIAL BRASS MANUFACTURING COMPANY

512 W. Harrison St., Chicago 7, Ill.

In Canada: 334 Lauder Ave., Toronto, Ontario

IMPERIAL

Pioneers in Tube Fittings and Tube Working Tools



Dress formed grinding wheels to a .0001" accuracy with the

B-1 Angle tangent to radius DRESSER

This easily operated formed wheel dresser is of sturdy construction and has exceptional built-in accuracy. Simple or complex forms can be dressed on grinding wheels to an accuracy of .0001". Years of use in thousands of plants have proved the worth of the Vinco Model B-1 dresser on production work as well as tool room and gage grinding operations.

Prompt Delivery

VINCO CORPORATION
9119 Schaefer Hwy., Detroit 28, Mich.

FREE! Send for this fully illustrated folder today. It's full of operating information and details concerning the famous B-1 dresser.

VINCO
MILLIONTHS OF AN INCH FOR SALE

THE TRADEMARK OF DEPENDABILITY®

(*Continued from page* 312)

It has a low vapor pressure and a high flash point. Its 100 per cent solids content and low viscosity readily allow complete filling of pores. G-E 3255 Permafil also has a longer tank and cures more quickly at lower temperatures than conventional sealants. It withstands the attack of chemicals, oils and gasoline after curing, and is appreciably soluble only in hot strong caustic or alkaline solutions.

* * *

Better Informed Salesmen Aim of S.P.S. Letter Program

Industry's traditional and sometimes poorly conceived stimulus to the field sales force, the periodic letter to salesmen, has been developed into a hard-hitting, quality product by Standard Pressed Steel Co., Jenkintown, Pa.

J. Whiting Friel, vice president, launched the letter program four years ago as a key instrument of policy and plans. He applies techniques which in manufacturing would be research and development, quality control and smart packaging. These monthly messages are directed to some 3000 of SPS' distributor salesmen throughout the country.

"We knew we would be in competition with many other companies, 15 to 20 of them, in this job of educating new salesmen," Mr. Friel said. "It had to be done right or not at all. At that time, we sat down and planned as carefully as though it were a new precision metal fastener that would have to be the best on the market to sell."

Topics for the letters range from heat treating and quality control to sales tips and application of SPS products. In some instances, two and three letters have been used to give the subject comprehensive coverage.

Many of the topics may sound frightening but Mr. Friel has divested the information of its technical aspects and presented the essentials in a non-technical way so that salesmen can get the facts fast and without too much effort.

"The trouble with too many promotion letters," Mr. Friel says, "is that people think big words and involved construction are a sign of learning. It's a sign of learning being needed. If people can't understand what you write, quickly, without effort, they are not going to read it. And if they aren't going to read it, why write it?"

self-locking fasteners

Elastic Stop nuts

HEX NUT

SPLINE NUT

HIGH TENSILE NUT

CLINCH NUT

1200° F. HIGH-TEMP. NUT

GANG CHANNEL NUTS

FLOATING ANCHOR NUT

Every major aircraft now being assembled relies on the vibration-proof holding power of ELASTIC STOP nuts. Only ESNA manufactures a complete line of all types and sizes of self-locking nuts.

Rollpins

dia. from 1/16" to 1/2"

Rollpins are slotted, tubular steel, pressed-fit pins with chamfered ends. They drive easily into holes drilled to normal tolerances, compressing as driven. Extra assembly steps like hole reaming or peening are eliminated. Rollpins *lock* in place, yet are readily removed with a punch and may be reused.

Cut assembly costs by using Rollpins as set screws, positioning dowels, clevis or hinge pins. Specify them in place of straight, serrated, tapered or cotter type pins.

ESNA TRADE MARK

ELASTIC STOP NUT CORPORATION OF AMERICA

ROLLPIN TRADEMARK

Mail Coupon for Design information

Elastic Stop Nut Corporation of America
Dept. N34-915 2330 Vauxhall Road, Union, N. J.

Please send me the following free fastening information:

- ☐ Elastic Stop Nut Bulletin
- ☐ Rollpin Bulletin
- ☐ AN-ESNA Conversion Chart
- ☐ Here is a drawing of our product. What fastener would you suggest?

Name_____ Title_____

Firm_____

Street_____

City_____ Zone____ State_____

Long Life Sealing...
For Any Packing Application

Quaker

SHEET PACKING

Packing that stays put! That's Quaker super-tough sheet packing. It stands up to vibration and pressure; resists deterioration by steam, gas, vapors, acids; stays pliable . . . and expands where it should. For low cost, long service and trouble free operation, re-pack with Quaker.

Write for name of nearest distributor.

Belting, Hose, Packing and Moulded Rubber of every construction for every need.

QUAKER RUBBER CORPORATION
DIVISION OF H. K. PORTER COMPANY, INC.
OF PITTSBURGH
PHILADELPHIA 24, PA.
Branches in Principal Cities

See Long Range Benefits From Use of Electric Furnaces

Replacing open hearth furnaces by electric furnaces could decrease the cost of making low-carbon steel by up to $3.15 per ton, increase the national output of electricity by 12%, and increase coal production about 25,000,000 tons a year.

These are the conclusions reached by Bituminous Coal Research, Inc., after a two-year research project it has just completed along with 14 electric utility companies. BCR is the national research agency of the bituminous coal industry.

Open hearth furnaces are fired primarily with oil; electric furnaces operate on power usually generated from coal. Expected future changes in costs of fuels and metals used by the electric and the open hearth were said to favor the electric furnace.

The increase in electricity output and coal production that could be effected by the change are based on estimates assuming a total replacement of the existing 950 open hearth furnaces by 760 electric furnaces.

Laminated Plastics Bonded To Steel Desk Tops

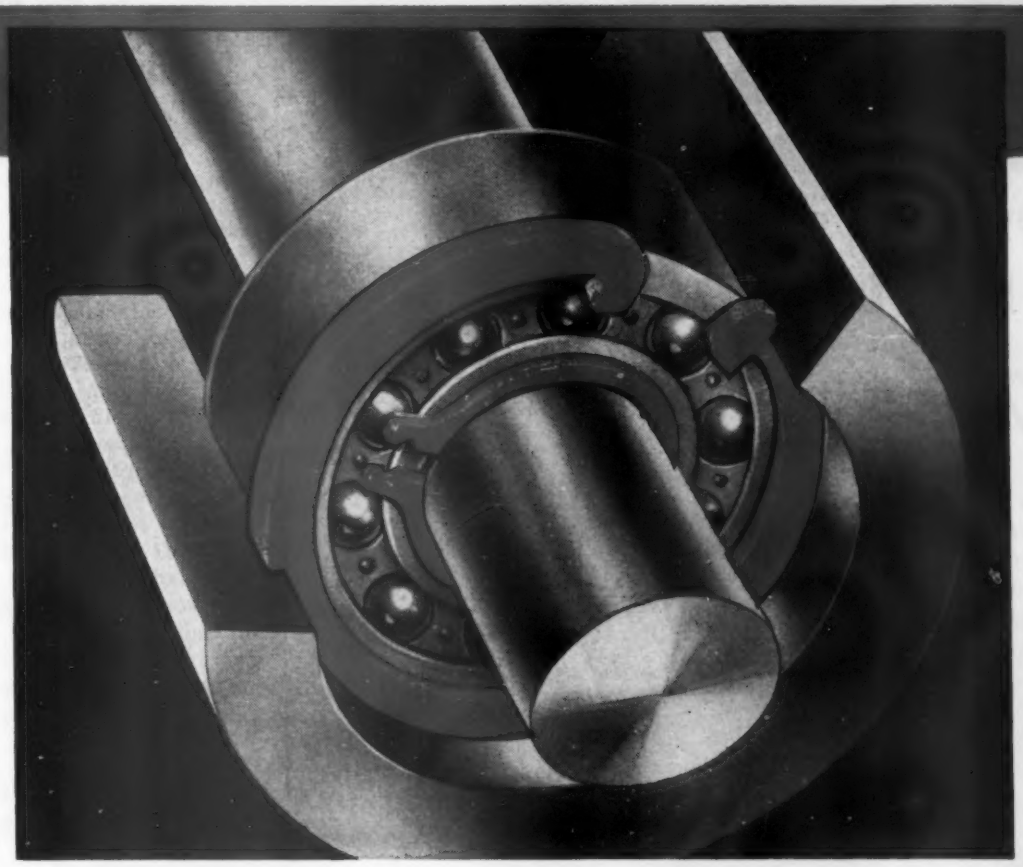
A significant advance in the field of plastics surfacing has been made known by General Electric Company with the announcement that laminated plastics is now being firmly bonded to steel as well as to conventional wood backing. Three major manufacturers have combined engineering talents to apply attractive and durable laminates to metal office furniture.

After extensive development work, the General Fireproofing Company of Youngstown, Ohio, is ready with a line of modern desks, office tables and telephone stands surfaced with G-E Textolite plastics tops produced by the G.E.'s laminated and insulating products department at Coshocton, Ohio. This new use of laminates was accomplished with an unusual adhesive produced by the Armstrong Cork Company.

The G-E Textolite desk tops are said to add years of durability and beauty to General Fireproofing's executive line of Mode-Maker furniture. Glare and light reflectance are minimized by the plastics' satin finish, three-dimensional pattern and gray-green color which conforms to standards set by General Electric color and lighting special-

(*Please turn to page* 324)

•Save Time •Save Materials •Save Money!



Examine the designs of **all** your products and machines. No doubt you can use retaining rings on axles and in housings – not **only to save assembly time, but to save weight, parts and space.**

The use of these inexpensive yet efficient artificial shoulders is already widespread, and is increasing daily.

There are literally thousands of places in which redesigning for retaining rings can increase your profits and improve your products – uses ranging from heavy duty engines and drill presses to toys, gadgets and small parts of innumerable articles.

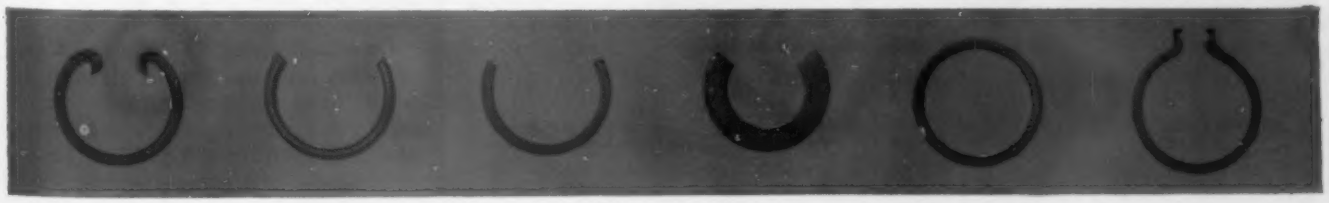
It's wasteful to cut down shafts to make shoulders. Redesign to groove smaller shafts and housings and use these high grade steel rings.

Let our engineers consult with you. Send for folders.

Don't pass up this opportunity to increase profits.

THE NATIONAL LOCK WASHER CO.

NEWARK 5, NEW JERSEY • MILWAUKEE 2, WISCONSIN



here's large size in socket screws
(larger than usually listed)

Diameters up to 1 1/2"—and larger in full range of lengths

they're part of the
CLEVELAND
Top Quality
line

It's good to know where you can find these unusual sizes in plain head Socket Screws, accurately made of alloy steel by modern methods—double heat treated to obtain desirable physical properties—and shipped with *threads protected.*

write for prices and delivery information

. . . In the standard range of sizes Cleveland makes plain and knurled regular Socket Heads and Flat Socket Heads. Also a wide range of sizes in Hexagon, Flat and Fillister Head Cap Screws, Square Head Set Screws, and Milled Studs.

CLEVELAND Top Quality FASTENERS

THE CLEVELAND CAP SCREW COMPANY
2922 East 79th Street, Cleveland 4, Ohio

originators of the Kaufman DOUBLE EXTRUSION Process

(*Continued from page 320*)

ists. The tops resist burns from cigarettes and withstand heavy use without cracking. Spilled ink and pencil marks can be wiped clean with a damp cloth and the smooth-textured finish provides an ideal writing surface, General Electric says.

U. S. Rubber Has New Vinyl Resin for Dry Blend Feed

A new vinyl resin, designed for dry blend feed of extruded products such as wire jacketing, tubing, welting, garden hose and similar products, has been developed by the Naugatuck Chemical Division, United States Rubber Company, it was announced today.

Dry blend feeding has been gaining in importance, since it is a fast and economical method for fabricating extruded plastic products. Labor and machinery costs are reduced with this method, since it does not require the use of internal mixers or open mills.

The new resin, known as Marvinol VR-22, is a straight polyvinyl chloride resin of high molecular weight. It rapidly absorbs plasticizer in heated mixers and gives a dry, free flowing mix of high uniformity. In addition to use in conventional dry blend equipment, it can also be used in open mills or Banbury mixers for calendar operations.

Papers Made of Glass Fibers Have Many Industrial Uses

Papers made of extremely fine fibers of glass are being used in a variety of industrial specialty applications, Owens-Corning Fiberglas Corporation has announced.

These incombustible, inorganic industrial papers are being used for the filtration of hot and/or corrosive air, gases, and liquids. They are also finding application as base sheets in specialty electrical laminates, as gasketing material, and as plate separators in aircraft and other special batteries. In such applications, the inherent high temperature resistance and excellent electrical-chemical properties of the product are very desirable. Many other possible uses are visualized by the company but have yet to be fully explored.

Owens-Corning Fiberglas Corporation sells the fibrous glass in its wool form to the various paper companies which process the fibers and manufacture the finished product into the customers' requirements.

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GET THE FACTS!

Ask for Bulletin D-2102. It describes and illustrates features, applications, components and operation; dimensions and characteristics also are included.

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New Contract to Bring 6,000 Ton Increase in Titanium Output

Production of titanium sponge, the almost-pure raw material from which the "wonder metal" is made, will be increased by 6,000 tons a year as result of a contract between Cramet Inc., of Chicago, and the Defense Materials Procurement Agency. The announcement was made by Edmund F. Mansure, Administrator of DMPA.

The contract calls for construction of a 25 million dollar plant. Final selection of the site has not been made, but a location near Nashville, Tenn. is under consideration. Scheduled for partial production by early 1955 and full production a year later, the new plant will include facilities for production of ingots of titanium and titanium alloys as well as sponge.

It will be the biggest titanium operation so far undertaken in the Government - industry expansion program.

In all, the contract with Cramet, a wholly owned subsidiary of Crane Co., Chicago, calls for production of 30,000 tons of titanium sponge over a period of five years. DMPA will advance the company up to $24,950.-000 for construction and equipment costs to be repaid with interest as titanium sponge is produced.

Dow Develops Silicone Magnet Wire Enamel

Dow Corning Corporation, Midland, Mich., has developed a silicone magnet wire enamel with physical properties said to be comparable to the better organic wire enamels.

Tests to date indicate that the new material—not yet available commercially—has about the same life expectancy at 200C as conventional enamels have at 105C. Flexibility and scrape abrasion resistance compare favorably, and its resistance to solvents, oils and salt water is substantially superior.

The new material, called Dow Corning 1360, is expected to help improve the design and performance of many electronic devices. The company says that life and reliability can be greatly increased, especially in fractional motors or miniature equipment where space is a major consideration. Information, including typical properties, a table of chemical resistance, application techniques and comparative twist-aging data can be had from Dow Corning Corporation.

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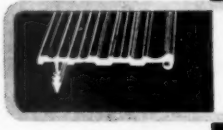

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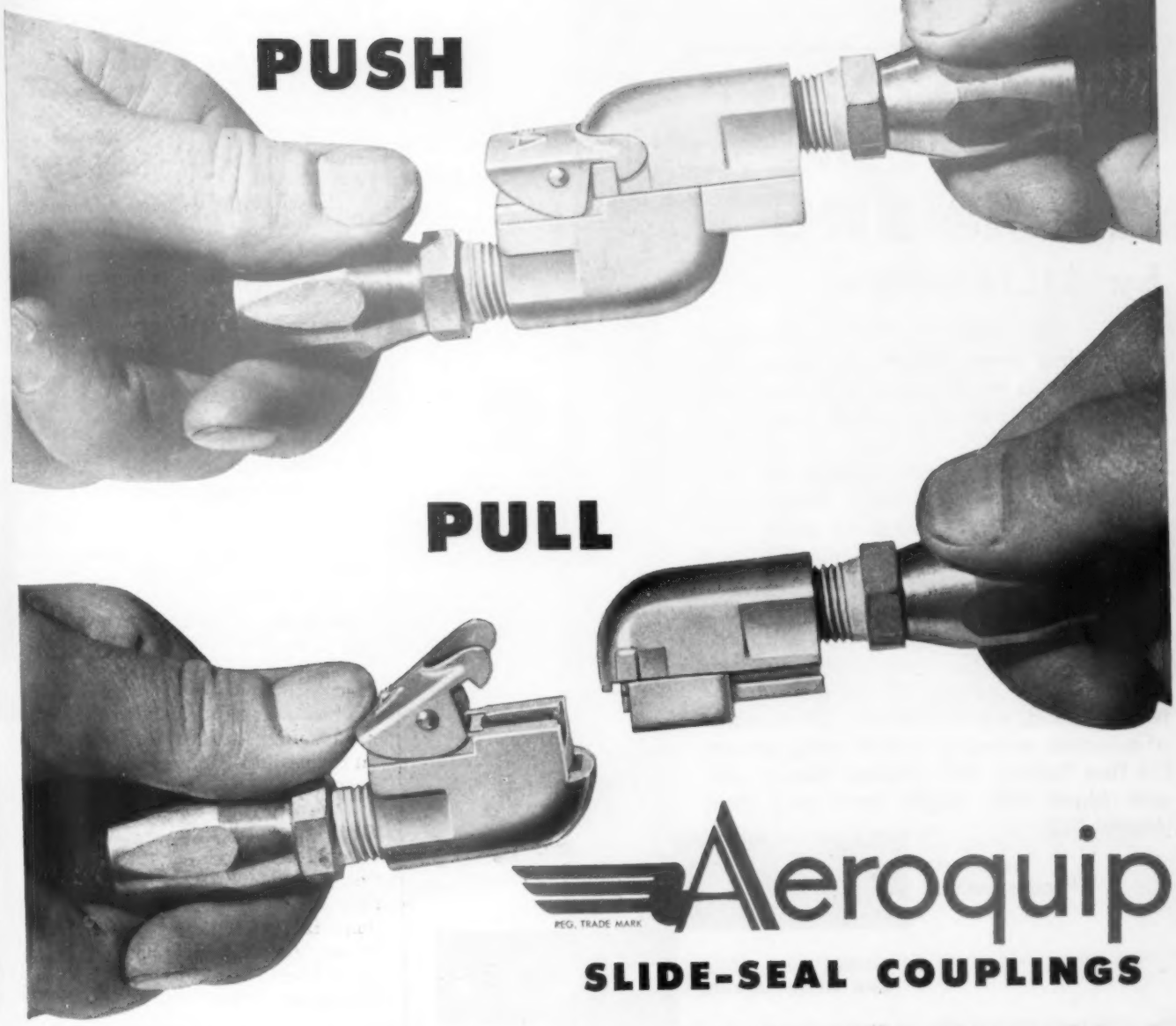

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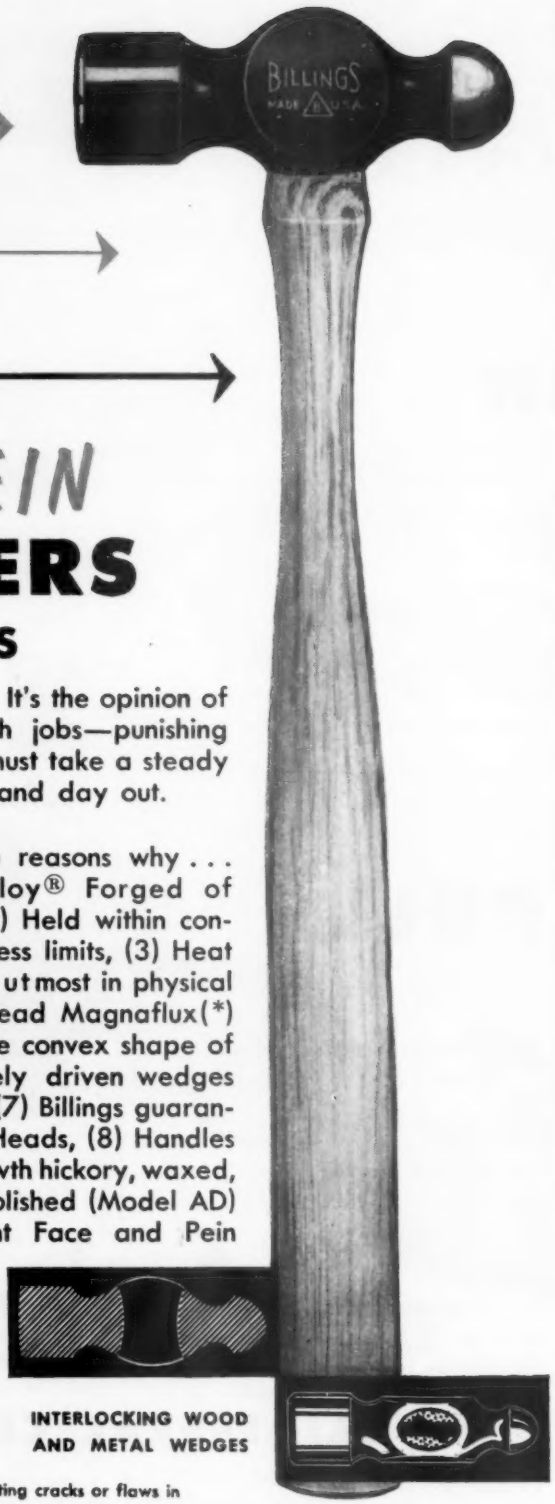
Here are some of the reasons why . . . (1) Heads are Vitalloy® Forged of selected alloy steel, (2) Held within controlled specified hardness limits, (3) Heat treated to develop the utmost in physical properties, (4) Every head Magnaflux(*) inspected, (5) Distinctive convex shape of Eye, (6) Securely driven wedges interlocked for safety, (7) Billings guarantee of sound, perfect Heads, (8) Handles of selected, second growth hickory, waxed, (9) Two finishes, full polished (Model AD) and black with bright Face and Pein (Model BC).



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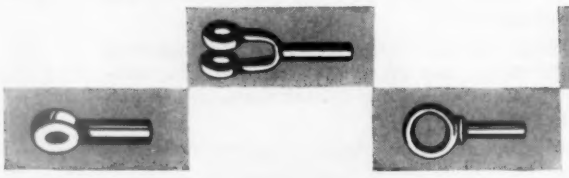

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New High Tenacity Rayon Yarn Adds Strength to Tires, Belts

A new high-tenacity rayon yarn provides added strength and toughness in automobile and truck tires and shows interesting potentialities for use in V-belts.

Called "Super-Cordura", the new yarn was developed by the Textile Fibers Department of the Du Pont Company. It is 20% stronger and has substantially greater fatigue resistance than existing high-tenacity yarn, according to Du Pont. Tires using the new yarn have shown outstanding performance on truck and taxi fleets where the tires were subjected to heavy use under difficult conditions.

Heavy duty V-belts with cords twisted from the yarn have performed well in power plant coal crushers, pulp beaters in paper mills and oil well slush pumps, Du Pont reports. The life of automotive belts built with the new rayon yarn has been increased more than 50%, according to tests.

Specifications Book on Lighting Equipment Published

A handy, authoritative aid for everyone connected with the purchase, specification or recommendation of industrial lighting equipment is the 1953 RLM Specifications Book prepared by RLM Standards Institute, 326 W. Madison St., Chicago 6.

This book, which is one of the most sought after reference works on industrial lighting equipment, has been revised to provide more help for the user and to make reference easier than in previous issues. Additional inclusions in the 1953 edition are new and revised lighting data such as: coefficient of utilization tables, lighting distribution curves and specifications on RLM semi-direct "Upward Component" fluorescent units.

Card Lists Clad Steel Data

Conversion tables and theoretical weights for clad steel plates are conveniently assembled on a new information card available from Lukens Steel Company, Coatesville, Pa. Lukens says the reference tables are the most complete yet published on clad steel conversion data, and will be of special interest to anyone initiating specifications for clad steels, as well as to equipment fabricators.

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RCA Tube Department Announces Commercial Printed Circuit Components

More compact and efficient radios, TV receivers, and communications equipment were envisioned with the recent announcement of printed-circuit electronic inductors mass-produced for general use. In such components, printed circuitry replaces conventional wire windings with uniformly made printed coils, according to the Tube Department of the RCA Victor Division, Radio Corporation of America.

These new components — six 40-megacycle IF transformers, coils, and traps — are produced by a special photo-etching process which makes possible virtually limitless production of identical electronic circuits from a single photographic negative, according to L. S. Thees, general sales manager of the RCA Tube Department.

Conventional inductors depend upon coils of hand-wound or machine-wound copper wire to provide the desired inductance values; the exact values are largely determined by the number of turns of wire, its spacing and the diameter of the coil form. With the printed circuit method, both the operations are eliminated. Inductances are provided by flat inductors having rectangular windings which are photographically printed on copper-clad plastic strips.

Although these RCA printed-circuit components are intended for application in home television receivers, the same photo-etching process can be used to print circuits for components used in a wide range of radio and communications equipment, Mr. Thees said.

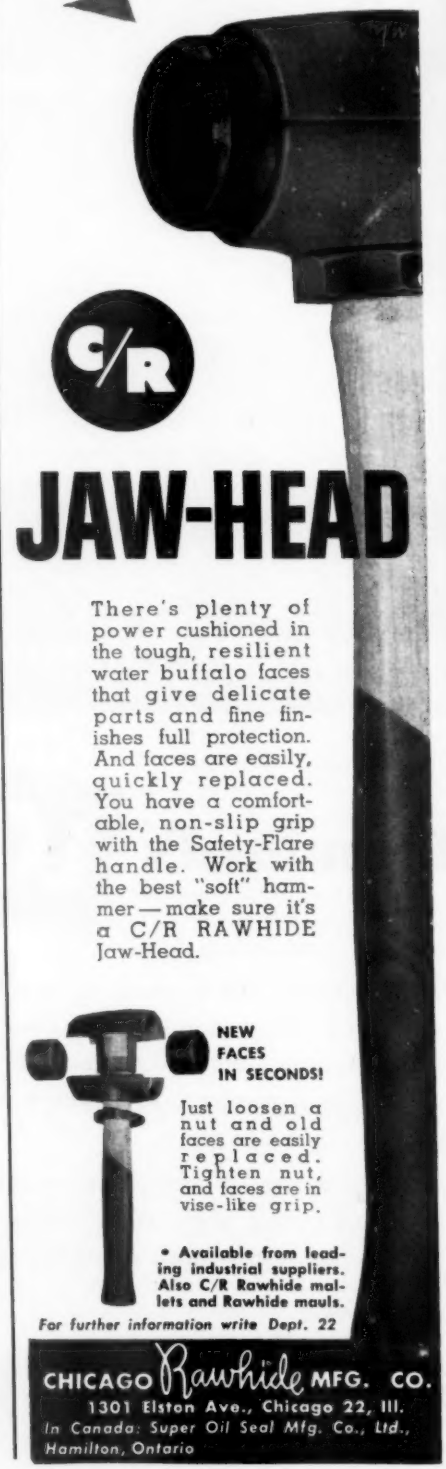
Employee's Safety Rules Manual Available in Quantities

A new employee rules manual, issued by the National Safety Council and entitled "Working Together for Safety" is available in quantity from the council at 425 North Michigan Avenue, Chicago 11, Ill.

Safe practices covered are based on practical experiences of workers, supervisors and safety specialists. Special sections on machine operation, hand tools, power tools, protective clothing, fire prevention, materials handling, and related topics are included.

Free sample copies and prices for quantities are available from the Safety Council.

you can't buy a **better** "soft" hammer — anywhere!



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There's plenty of power cushioned in the tough, resilient water buffalo faces that give delicate parts and fine finishes full protection. And faces are easily, quickly replaced. You have a comfortable, non-slip grip with the Safety-Flare handle. Work with the best "soft" hammer — make sure it's a C/R RAWHIDE Jaw-Head.

NEW FACES IN SECONDS!

Just loosen a nut and old faces are easily replaced. Tighten nut, and faces are in vise-like grip.

• Available from leading industrial suppliers. Also C/R Rawhide mallets and Rawhide mauls.

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If you are production drilling non-ferrous metals, efficiency requires selection of proper speeds, feeds, and most of all, drills specifically applicable to the material. From the complete line of W & B drills you can select a drill for each non-ferrous metal, that is carefully designed to increase production and lower your cost per hole.

A typical W & B non-ferrous drill is the "Fastwist" type, which is recommended for high speed drilling of aluminum, magnesium, zinc, other die cast metals and metals of low tensile strength. For maximum results on individual non-ferrous drilling applications it will pay you to investigate the W & B drill designs available.

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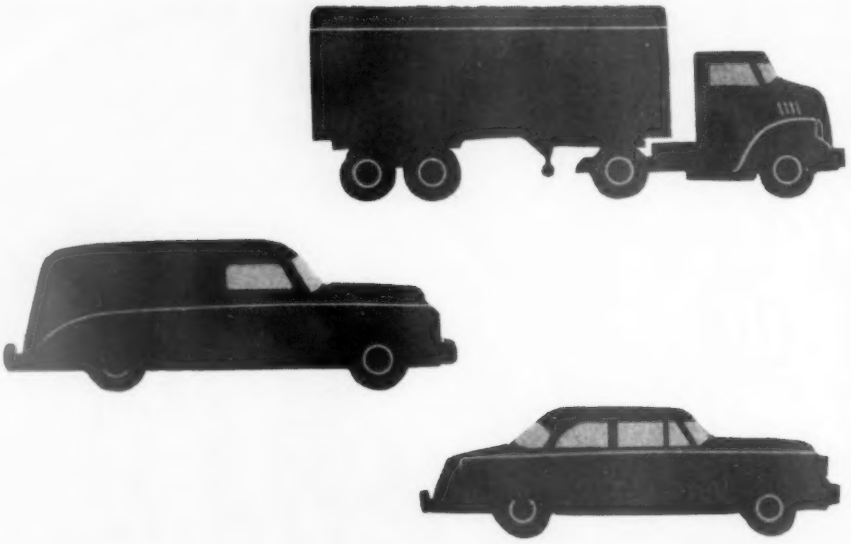

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Chain for every need . . . industrial . . . marine . . . farm . . . automotive

Options, Offers, Agents and Warranties

(*Continued from page* 124)

develop defects that would not show up while idling.

"That the motor recommended by Elder as being capable of doing the job required by Wallower had had hard service, was well known to Elder. Wallower would have been justified in relying upon the seller's representation and judgment in the matter, but if this question was in the least doubtful, it was for the jury to settle, and it determined that fact in Wallower's favor. We believe that the testimony supports the finding of the jury that there could be an implied warranty under the circumstances."

The higher courts also generally hold that once a jury has rendered its verdict, the next higher court must approve the verdict unless it is erroneous and based on prejudice or if relevant testimony is overlooked or disregarded. In this respect the higher court said:

"There is ample evidence to support the jury's verdict in Wallower's favor when it failed to return a verdict submitted to it in Elder's favor, it was an error for the lower court to set aside the jury's verdict and enter a factual verdict in favor of Elder. For the reasons stated herein, the judgment is reversed and the cause remanded with directions to reinstate the jury's verdict.

Booklet to Help Small Firms With Materials Handling

Help for small business firms with materials handling problems is offered in a new booklet available from the Small Defense Plants Administration.

The 42-page booklet, "Improving Materials Handling In Small Plants", outlines a method for determining whether a plant's materials handling system is as good as it should be. It explains the various types of equipment that may be used to increase efficiency. It gives practical pointers on good plant layout, and explains how waste motion and effort may be reduced in many machine operations. Other sections discuss safe handling, selection of proper equipment, and getting the best out of present equipment.

The booklet can be obtained from Superintendent of Documents, Washington 25, D. C., at 20 cents per copy.

It tells heat where to go!

It would be a cold day in many an industrial plant without modern unit heaters. These efficient units pour out warmth and comfort right where they are needed.

At the heart of each unit is a quiet, dependable fan that sends the heat on its way. *On many of America's best known unit heaters Emerson-Electric special fan-duty motors power the fans.*

Emerson-Electric specializes in building motors for equipment with a reputation for dependability. It has done so for 63 years, and offers efficient motors for a wide variety of applications, in ratings from 1/20 to 5 h.p., and hermetic motors ⅛ to 20 h.p.

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Sales Engineers in All Principal Cities

Skilled in Electronic Component Parts
RESEARCH • DESIGN
ENGINEERING
MANUFACTURING

GOOD ORDERING HABITS

(*Continued from page* 74)

Do you know what you want when you order? Do you check your requisitions carefully before calling them in as orders? Some buyers get the order board on the wire and then decide what they need for that day. This wastes time. Also, it often results in misunderstanding, wrong merchandise, and—inevitably—poor customer and vendor relations.

Do you question unfamiliar material before ordering?? If the store asks for a widget, do you know what a widget is? What particular kind of a widget this one is? How big it is? What make it is? Or, do you have to run around gathering information while the order clerk patiently or impatiently awaits your return? If the requisition looks unusual, call the requisitioner first. Find out what the story is. You'll save yourself a lot of grief.

Do you place orders accurately? Ordering should be done efficiently. A majority of orders are routine enough to make this possible. Here's what the supplier has to know: Name of article, quantity, unit, catalog or manufacturer's number, description. (For example: 4 dozen pairs welder's gloves, #123 Johnson, black, medium.)

Do you place orders quickly? The clerk is usually pleasant to talk to, but try to keep it brief. Whether the fishing is good or not, the red light is probably on above his board, meaning that other customers are waiting to place their orders—and talk about fishing.

Do you avoid crying "Wolf"? Don't demand material or immediate delivery when you don't actually need it. Particularly material in short supply, or off-schedule deliveries. Eventually, vendors find out about the buyer who cries "Wolf". They aren't too sympathetic with him. And he is jeopardizing his own company, when the real emergency arises, if he persists in such tactics.

Do you try to speak clearly and not too fast? Ordoyoutalklikethis? Order board personnel are human, too. They often have a difficult time deciphering what the customer wants. The clerk is probably writing the order as you are talking, so take your time. You'll save repeating yourself and avoid needless questions. If you happen to be in hurry some time, you may order a hygrometer and get a hydrometer instead.

(*Please turn to page* 344)

Think of CENTRAL

ALL HEADS STYLES • ALL METALS

RESEARCH—Aimed at superior products, Central's years of exhaustive research on all types of pre-assembled lockwasher applications make possible the broadest use of the Sems method of fastening.

KNOW-HOW—Central's Sems come to you with proven *pre-determined* specifications for the correct ranges of spring action, recommended types of washers (external—internal—countersunk—large dome—ring diameter—helical—flat washers—Neoprene or fibre discs).

QUALITY—Years of experience in fastener design and tool control, coupled with high speed precision production equipment, insures top quality. Central's Sems with Phillips Recessed, standard slotted, clutch heads obtainable with every type of pre-assembled washer, will reduce your costs.

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Capacity — 1000 lbs. lead

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JOHNSON Soft-Metal Melting Furnaces are also available in smaller sizes. Write for complete catalog.

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Transcribed music in our plant, for our employees' enjoyment while they work; a baseball team for their recreation after work . . . these are just two of the many details we attend to, in our efforts to maintain high employee morale and efficiency so necessary for *consistent* production of a quality product—the *best* in custom gears. They're just further reasons why every gear order you place with Cincinnati Gear will be handled to your complete satisfaction.

Spur
Helical
Worm
Herringbone
Internal
***Coniflex Bevel**
Spiral Bevel
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*Reg. U. S. Pat. Off.

THE CINCINNATI GEAR COMPANY
"Gears . . . Good Gears Only"
Wooster Pike and Mariemont Ave. • Cincinnati 27, Ohio

Good Ordering Habits

(*Continued from page* 342)

Do you realize the need for a vendor's questions? Or do you feel insulted when he asks additional questions about your order? His questioning, ordinarily is well founded—not merely the evidence of dumbness. It protects you and him from wrong merchandise, wrong deliveries, and wrong prices.

Do you temper your buying? Or do you demand more than your buying power warrants? You may not always be entitled to the best price brackets; you can't always expect delivery *now;* and, where shortages exist, you can't always insist on quantities your production doesn't justify. An order board tries to satisfy scores or hundreds of buyers each day. So, assist the vendor. Get what you are entiled to, of course, but whatever your situation requires, see that your "demands" are always honest—and you'll get honest treatment.

Do you believe in the need for good telephone ordering habits? If your answer to this one is "Yes", you need only to practice what you believe. That is all anyone can ask. Study your orders carefully, develop your ordering ability, and be tolerant. Good ordering is simply planning, practice, and patience.

And that's more than good ordering. It's good business.

* * *

Sales and Use Taxes

(*Continued from page* 89)

er through such restricted representation was engaged in the business of selling tangible personal property in this state."

For the purpose of capturing sales taxes evaded by purchases made outside the state, legislatures have enacted use tax laws that impose a tax on property bought outside but brought within the state for use and enjoyment by its purchasers.

An Oklahoma statute provides for such a tax at the rate of 2% on the purchase price of tangible personal property "purchased, leased, rented or exchanged for the privilege of using such property," with the further provision that if such property had been subject to a use or sales tax less than the tax imposed either by the state of Oklahoma or elsewhere, then the tax imposed under this law should be the difference between the rate

(*Please turn to page* 348)

To keep going longer... replace with

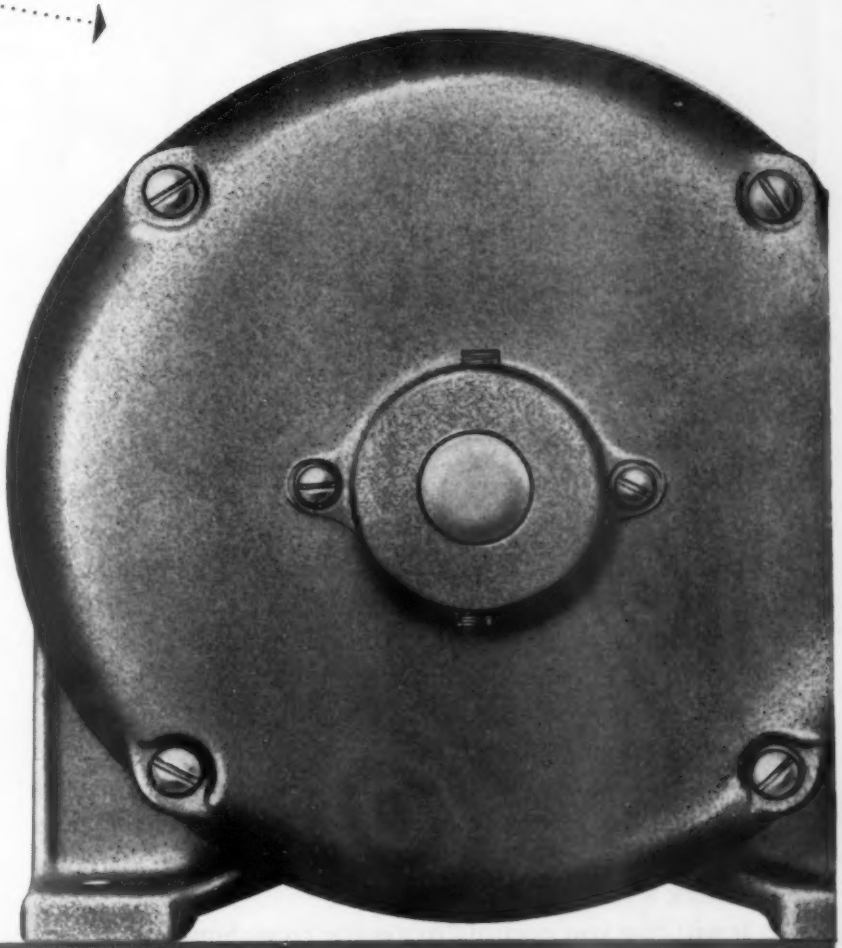
Delco Motors

When conditions are the most severe, Delco motors prove their worth. The high standards that guide their design, engineering and construction insure the extra endurance that minimizes servicing and down-time.

Delco replacement motors are available fast, from your local Delco motor distributor.

THERE'S A DELCO
FOR PRACTICALLY ANY
INDUSTRIAL APPLICATION

Open and enclosed motors up to 100 h.p. for standard foot mountings. NEMA C&D flange-mounted motors up to 30 h.p. Explosion-proof motors up to 20 h.p.



DELCO PRODUCTS

Division of General Motors Corporation, Dayton, Ohio

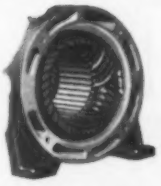
A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

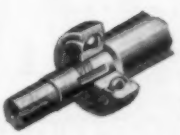
THESE FEATURES KEEP DELCO MOTORS GOING LONGER

Water-Tight Conduit Box. Protects against moisture.

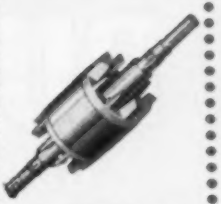
Positive Lubrication. Lengthens bearing life.



Delcote Insulation. Permanently flexible, moisture-proof, wear resistant.



Positioned Bearings. Maintain shaft alignment.

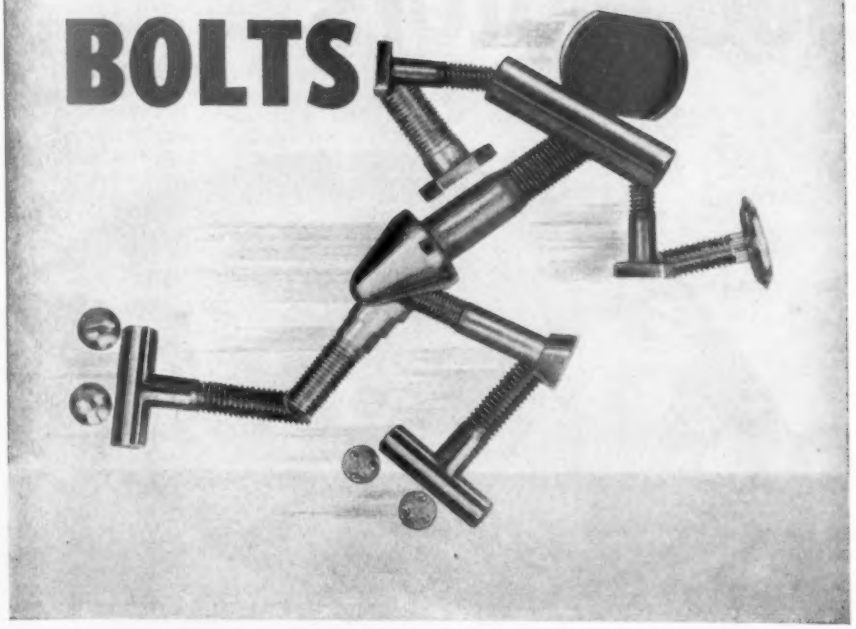


Dynamically Balanced Rotor and Shaft Assembly. Reduces vibration.

Corrosive-Resistant Cast Iron Frame. More solid, more rugged.

SALES OFFICES: Atlanta • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Hartford • Philadelphia • St. Louis • San Francisco

We can be there in a hurry with SPECIAL BOLTS



We are equipped to design and manufacture special bolts to your individual requirements efficiently and quickly.

By using special Circle Ⓑ bolts, you can often simplify design . . . add extra holding strength . . . speed assembly . . . and lower unit costs.

In bringing all of your fastener problems to us . . . you receive the attention of specialists who can demonstrate the practical advantages of adopting special bolts . . . and who can *also* supply your requirements for standard fasteners.

It will cost you nothing to get the facts. Simply write us.

Ⓑ BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation

North Tonawanda, N. Y.

Sales Offices in Principal Cities

PRODUCERS OF CIRCLE Ⓑ PRODUCTS — BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

Sales and Use Taxes

(*Continued from page* 344)

fixed of 2% and the amount of the previous tax.

An oil company with a pipe line extending from Texas, through Oklahoma, to Indiana, purchased outside the state machinery and repair parts for use within the state in the maintenance of this pipe line, on which the state imposed this use tax. The company sued to recover the amount it had been thus forced to pay, contending that the tax was an interference by the state with interstate commerce.

The Oklahoma court, ruling that this tax was legally imposed, said, "There was a taxable moment after the property had reached the end of its movement in interstate commerce and before the beginning of its use and consumption in the interstate operations of the purchaser. The retention and exercise of the right of ownership during that moment was sufficient to support the levying of an excise tax on storage and use under the statute of the state."

The method of reasoning in this instance is that attributed to John Marshall, when Chief Justice of the Supreme Court. After hearing an argument before that court he would state to Justice Story the substance of the decision to be handed down, adding, "That's the law, Story, now you find the authorities."

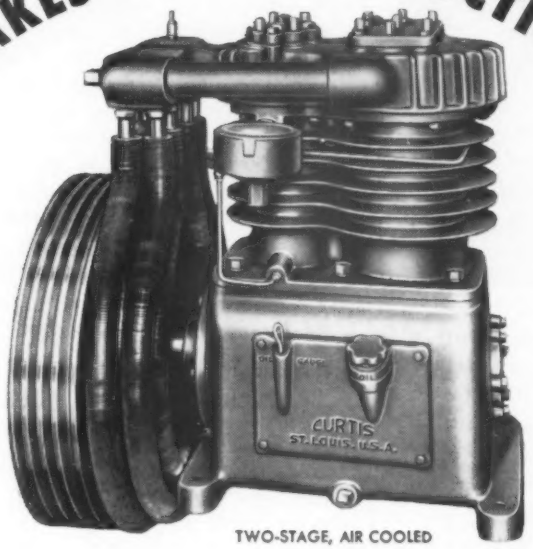
Spirit of the Law

A use tax statute in Iowa was as follows: "An excise tax is hereby imposed on the use in this state of tangible personal property purchased on or after the effective date of this chapter for use in this state, at the rate of 2% of the purchase price of such property. Said tax is hereby imposed upon every person using such property within this state until such tax has been paid directly to the county treasurer, to a retailer, or to the Commissioner as hereinafter provided."

An Idaho contractor engaged on a construction contract for the Chicago, Rock Island & Pacific Railroad, brought equipment into the state from Washington, Oregon, Idaho, North Carolina, New York, Alaska, California, and Arizona. An assessment of $5,121.86 was made under the use tax law. The contractor paid the tax and then sued the state for its recovery. In awarding a judgment against the state, the court said of this manner of en-

(*Please turn to page* 350)

Dependable, Efficient Curtis AIR COMPRESSORS AIR HOISTS AIR CYLINDERS MAKES YOUR PRODUCTION MORE PROFITABLE

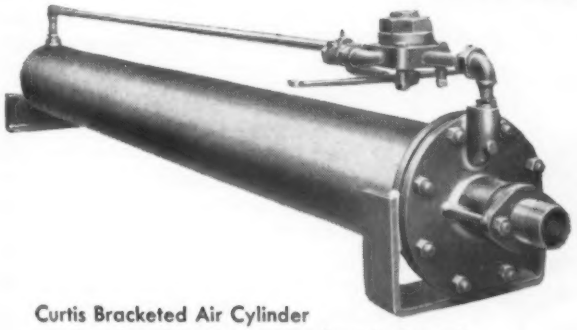


TWO-STAGE, AIR COOLED

PRECISION BUILT COMPRESSORS UP TO 50 H.P.

- Advanced two-stage design saves electric current.
- Delivers more air per horsepower.
- Timken tapered main bearings.
- Pressure lubricated rod and piston bearings.
- Assures long trouble-free performance.

TIME-SAVING Curtis Air Cylinders and Air Hoists


Curtis Bracketed Air Cylinder can be placed in any position from horizontal to vertical. Will lift, lower, push or pull.

- Low-Cost lifting, lowering, pushing, or pulling
- Accurately controlled operating speed
- Cylinders are ground and polished
- Valve is of disc type lapped to its seat.

Curtis Pendant Air Hoist for any lifting or lowering job where headroom is not limited.

FOR COMPLETE INFORMATION and technical data, mail this coupon today . . .

CURTIS PNEUMATIC MACHINERY DIVISION

CURTIS PNEUMATIC MACHINERY DIVISION 741
of Curtis Manufacturing Co.
1908 Kienlen Avenue, St. Louis 20, Mo.

I am interested in items checked below:

☐ AIR COMPRESSORS ☐ AIR HOISTS ☐ AIR CYLINDERS

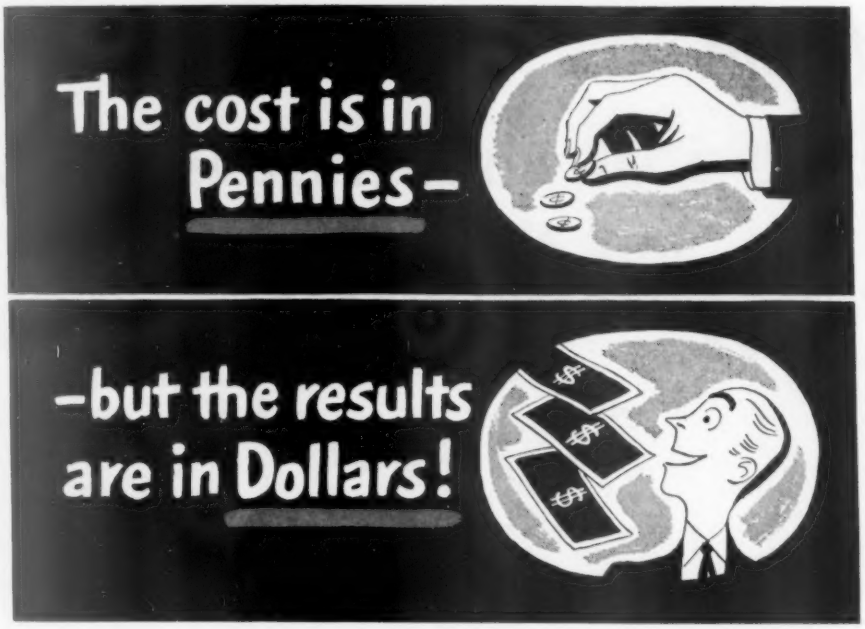
Capacity . . . Current . . . Load . . . Lift . . . Load . . . . . Lift . . . . .

Name . . . . . .

Firm . . . . . .

Street . . . . . .

City . . . . . Zone . . . . State . . . . . .



Never underestimate the importance of name plates on your product! Their worth is far out of proportion to the few pennies they add to your costs. As the "signature" on a product, the appearance of the name plate should reflect the maker's pride; its durability should match the quality of the product.

NAME PLATES THAT REFLECT QUALITY

CHICAGO THRIFT-ETCHING CORPORATION

We have the experience, the skilled craftsmanship, plus the latest and best equipment to produce high quality metal plates—to provide standout identification at the right price. We produce instruction plates that are clearly and easily readable—and stay that way for the life of the product. Quality plates will pay you dividends.

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ALUMINUM ANODIZING

We are equipped to apply this protective coating to aluminum parts and products, by the exclusive Alumilite process—in a wide range of attractive colors. Write for quotation.

Write for this Booklet!

GET OUR QUOTATION

Send a rough sketch, blue print or sample, with specifications, for quotation. Or write us fully about your requirements in name plates, instruction plates, dials, panels, scales, etc.

Write for our new book, "Etched or Lithographed Metal Products of Quality," containing full color examples

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Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Coin Banks • Lithographed or Screened Plastic Name Plates or Dials • Aluminum Anodizing by the Alumilite Process.

SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

Sales and Use Taxes

(*Continued from page* 348)

forcement of the use tax law,

"Our decisions have been careful to point out that the use tax law is supplementary to the sales tax law and protects Iowa dealers who must collect and pay a sales tax, by placing them on a tax equality with competing out-of-state vendors whose sales are not subject to the sales tax. Also, that the principal purpose of the use tax law was to remedy the evil of out-of-state buying to escape the sales tax. It may not fairly be said that this taxpayer's equipment was purchased outside Iowa to escape our sales tax or to take advantage of Iowa dealers. These transactions are not only not within the letter of the use-tax statute, they are not within its spirit."

Avoid Inventory Losses

(*Continued from page* 115)

tion. The operation should be revised or "tightened" so that such errors can't happen. Or the employee, if he is bright enough but careless, can be taught better procedures and impressed with the need for sounder checking. If the employee hasn't the capacity to handle the job properly, he should be eliminated or transferred to other duties which he can handle satisfactorily.

Maybe the fault lies in the purchasing department itself. Failure to keep records of price changes can lead to losses on inventory. Any increases in cost should be noted as they become known.

The real key to the control of inventory lies in closely kept receiving records. Sometimes shipments are short in quantity or weight through mistakes on the supplier's end. At other times, goods are damaged in transit, and unless there are tight controls, receiving clerks may shunt these along to the departments to which they are consigned, where the damaged items are discarded, leaving a shortage showing on the records and a dead loss staring the company in the face. By that time, it may be too late to do anything to collect for the damages, or to correct short weight or short quantities.

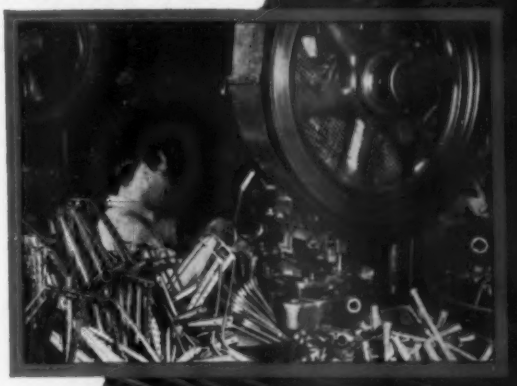
Sometimes drivers make errors in their own counts, which the receiving clerks sign. The way to avoid losses due to these errors is

(*Please turn to page* 354)

Serving Industry....

Wire Forming • Metal Stamping
Deep-Drawing

Above: Section of plating and finishing department.
Below: One of a large battery of metal stamping machines.



The complete and extensive metal manufacturing facilities of Eastern Tool & Mfg. Co., from preliminary engineering and design to final finishing, are devoted to serving the needs of industry.

Our wire forming, metal stamping and deep-drawing divisions, capable of handling an almost infinite variety of shapes, sizes and kinds of metal, often at extremely close tolerances, are supplemented by a fully equipped plating and finishing department, all under one roof.

Eastern Tool & Mfg. Co. is truly an integrated operation, "manufacturing for other manufacturers since 1910".

Eastern Tool & Mfg. Co.

Belleville 9, New Jersey

Write for Booklet No. 100

behind this symbol is an on-hand inventory of *more than 9,000 items and sizes* of stainless steel fastenings. Ready for immediate shipment, this stock is the largest and most complete in the industry. In addition, a production capacity for large or small quantities of special orders is at your service! A good reason — when you think of stainless steel fastenings — to think FIRST of Anti-Corrosive! *Send for Catalog 53P today!*

ANTI-CORROSIVE METAL PRODUCTS CO., INC.
Castleton-on-Hudson, New York

Avoid Inventory Losses

(*Continued from page* 350)

to see that no one accepts a supplier's count without verification. This implies no distrust of the firms with which a purchasing agent does business, nor of the employees who serve these firms, but is merely good business sense and practice to avoid honest intentioned mistakes.

Counting pays off at other points, too. If a plant has a separate receiving department, the initial count should be made there. This count should include a check for damaged and short-weight shipments. If these errors are caught at the receiving platform, with the driver for the supplier or carrier present, it's easy to prove a claim for damages or miscounting. Later may be too late.

Counts should also be made when departments receive their materials and supplies from the receiving, stores, or purchasing department. If these counts do not agree with the inventory or original receiving count, a check on the spot will usually uncover the source of the error and avoid the possibility of taking an inventory loss.

Not all losses are due to mistakes, of course. But in any sizable group of people, there will inevitably crop up an occasional not-so-honest man or woman. This is a delicate situation to handle, and it's "dynamite" to plant morale if improperly or tactlessly handled. If employee dishonesty is suspected—and there is no reason to suspect it unless and until all of the other possibilities have been thoroughly explored and discarded—it may be well to look into these things:

Who has the greatest opportunity to lay hands on the items which are turning up consistently short?

Has any one keys in his possession that he could use during the night or other quiet hours?

Is there any one among the possible suspects who is known to have a need for money? That won't prove that he is taking it dishonestly, but it may furnish a lead—no more—on who will bear watching.

Has anyone obviously been living beyond his means?

Is there one among the group who resents any investigation into shortages, or who turns surly when the subject is brought up?

If actual personal dishonesty can be disclosed and proved, the offender can of course be eliminated

(*Please turn to page* 358)

32" long, 26" wide, 4" deep
11½" dia., 2" deep
42" long, 8" wide, 3" deep
VERSATILITY!
WHILE we, at Transue's, are known as America's foremost oil pan stamper, we have earned a reputation for quality deep drawn stampings in other fields. Business machines, food processing, agricultural machinery, and others, have gained both structural and economic benefits from an association with
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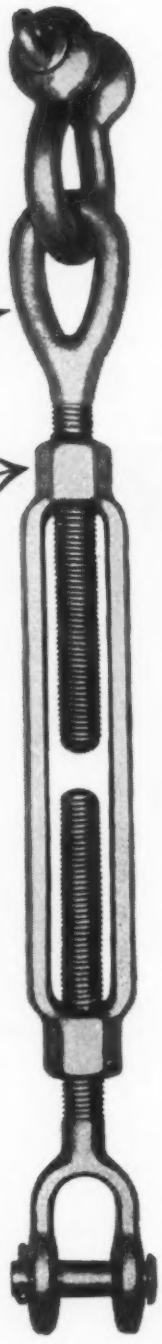
Sales Offices. NEW YORK, DETROIT, CHICAGO, CLEVELAND, PHILADELPHIA, INDIANAPOLIS
14⅝" long, 10⅜" wide, 6¼" deep
12½" long, 9½" wide, 5½" deep

IMPROVED TURNBUCKLES

have

NEW EYE DESIGN

HEX ENDS



Laughlin's exclusive pear shaped turnbuckle eyes were designed to eliminate need for special shapes. It's the only eye that will take the ear of a shackle one size smaller than the turnbuckle. The shape makes it stronger than a round eye. It looks better and works better. The next time you need turnbuckles order Laughlin and see for yourself.

All Laughlin turnbuckles have hexagon ends and rugged reins. Easily adjusted with a wrench. Wheelabrated finish dipped in a rust preventive or hot dip galvanized.

FOR SAFETY'S SAKE SAY

LAUGHLIN

The Full Line of Wire Rope & Chain Fittings

THE THOMAS LAUGHLIN CO., 94 Fore St., Portland, Me.

Avoid Inventory Losses

(*Continued from page* 354)

from the position. The better course, however, is to set up the procedure and practices for handling supplies not only so as to "keep 'em honest", but to keep employees free from even the suspicion of dishonesty. That's one of the basic responsibilities of the person responsible for inventory and for the avoidance of inventory losses.

"Mrs. P. A."

(*Continued from page* 116)

the figurative sense. If the angle or size is off by so much as a trifle, breakage may occur in the capping equipment. But trouble is held to the minimum by a consistent policy of dealing with reliable suppliers and maintaining good relationships with them.

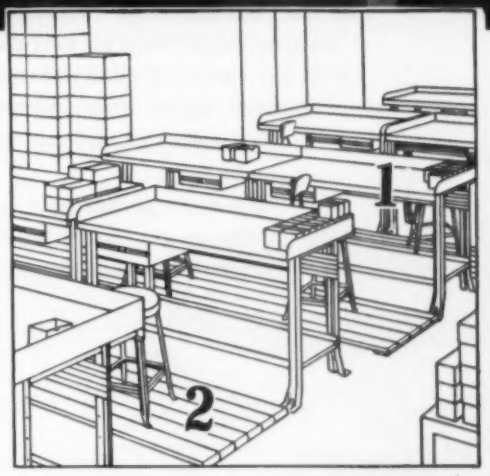
Nothing is allowed to interfere with the flow of supplies into the plant, and the purchasing department takes pride in keeping "on the job". Not long ago, Lederle officials decided to move "The Barracks"—the wartime prefabricated building which is her headquarters—to a new site on the 350-acre plant area. On Christmas Eve, the building was hoisted from its foundations, with typewriters still standing on the desks inside. The purchasing staff went to work promptly, as usual, but facing in a new direction, the morning work was resumed after the holiday, as though nothing out of the ordinary had occurred.

Mrs. Entwistle's career has paralleled the growth of the company. When she joined the organization, right after World War I, it was to handle hypodermic needles in the supply department. She recalls now than ten barrels of a chemical was a huge order in those days, where carloads are commonplace today. The purchasing department was not created until 1927. The hours of work were longer then—a 6-day week, from 8 to 5:30 on weekdays and 8 to 1 on Saturdays. Mrs. Entwistle worked at stockroom records, general office work and billing. One of the department's responsibilities was to open and distribute all plant mail. Apparently there were some misgivings about the whole idea in the early days, for she recalls a "crepe-soled superintendent with 3-foot legs who kept an eagle eye on everything."

(*Please turn to page* 360)

A PRACTICAL PACKAGING AREA—CUSTOM BUILT with Standard HALLOWELL Shop Equipment

Standard HALLOWELL Steel Shop Equipment makes it easy for you to set up a *custom-built* packaging area in your plant. All you have to do is lay out the space as you want it—and order the ready-made equipment from your HALLOWELL industrial distributor. Write us for details. STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

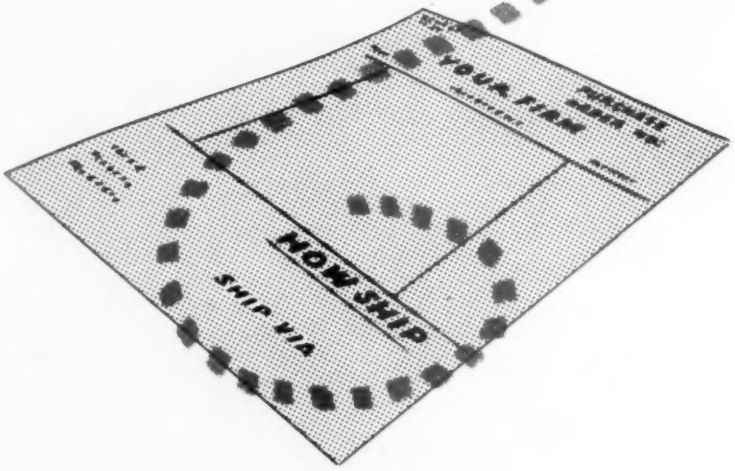


1. Work Benches 2. Stools and Chairs

Our Fiftieth Year : A START FOR THE FUTURE

HALLOWELL® SHOP EQUIPMENT DIVISION SPS JENKINTOWN PENNSYLVANIA

are you overlooking this important part of your purchase order?



■ Today, when freight costs and timely delivery are an important responsibility of the purchasing agent, care should be taken to specify shipment via the carrier best equipped to deliver the purchase reliably, on time, and at low cost.

That's why so many purchasing agents regularly specify: "SHIP VIA NATIONAL CARLOADING CORPORATION." National consolidates your purchases with others into full cars that move over the most direct routes on fast through schedules coast to coast. Our expert personnel can save you money through knowledge of the most favorable freight classification of your merchandise. You avoid shipping delays and extra charges, since National takes care of pick-up and delivery arrangements. Your accounting department benefits through National's one-bill-per-shipment procedure, eliminating much paperwork and bookkeeping.

On your next purchase order, particularly if it involves shipping cross-country, specify National Carloading Corporation. That way you purchase shipping "The Best Way."

FREE on request . . . "How the Freight Forwarder Helps the Purchasing Agent," as reprinted from Purchasing Magazine.

NATIONAL 'The Best Way' N

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19 RECTOR STREET, NEW YORK 6, N. Y.
Serving 30,000 communities through more than 150 stations in the U. S. and agents in principal foreign countries.

"Mrs. P. A."

(Continued from page 358)

Mrs. Entwistle became Purchasing Agent in 1941, and was promptly plunged into the busiest period of her busy career. Office hours had to be disregarded in wartime, and it was not unusual for her to work until 7 or 8 o'clock many evenings each week until the war was over. Lederle produced more than 1½ million units of blood plasma for the armed forces, among hundreds of other vital medical products.

Today, conditions are more orderly, though still busy. More than a hundred suppliers' representatives call on the purchasing department during the average week. They like to do business here. And they know that if the price of their product is likely to decline by the following Monday, Mrs. Entwistle probably knows the situation just as well as they do themselves.

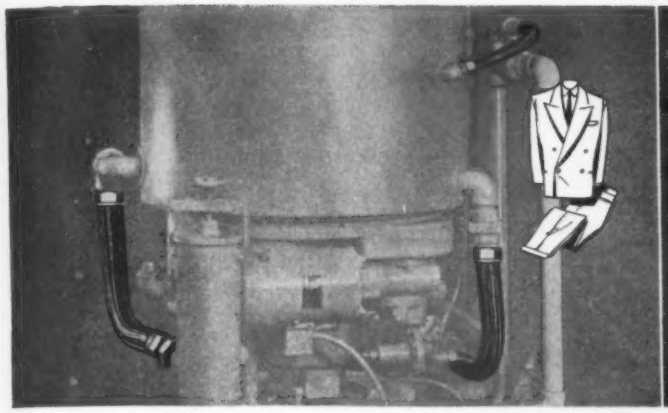
And the department has earned the respect and cooperation of all other branches of the company. Mrs. Entwistle explains this in part by her philosophy that "a service department has to have agreeable people." There has been very little turnover on her staff, particularly among her buyers. Brushing aside the statistics that only one purchasing agent in a hundred is a woman, she offers evidence of her faith in the female of the species by the fact that two of her buyers are women (one being responsible for raw chemicals, "Lederle's life blood") and several of the other workers in her group also are women. To a man—and woman—they respect the competent leadership and administrative ability that has made this a truly efficient purchasing department.

Minneapolis-Honeywell to "Package Process" Controls

"Packaged" units to provide automatic control of various industrial process operations have been introduced by the Minneapolis-Honeywell Regulator Company.

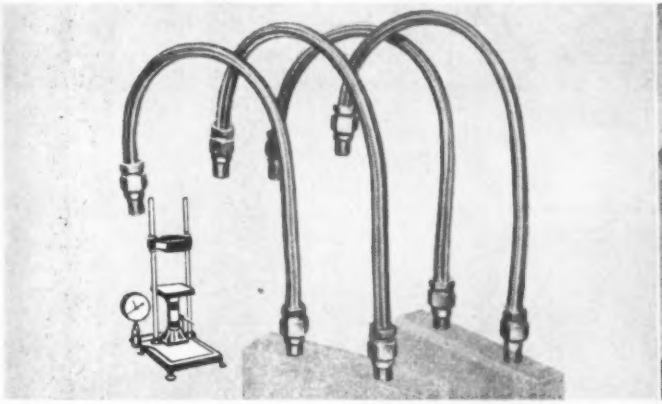
The units have been developed to take advantage of the uniformity among many process operations. Each unit, specially engineered for a particular operation, will include recording and controlling instruments, measuring and control elements and related accessories. Complete instructions are provided to facilitate their installation without benefit of specialized skills.

Pick an idea—lick a design problem...

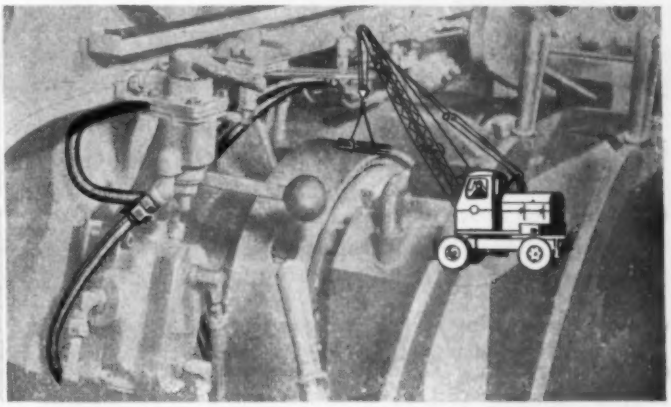


END VIBRATION AND LEAKAGE. Titeflex® metal hose, used as fill and drain lines of SEC Synthetic Cleaning Units, kills vibration and prevents solvent leakage at fittings. Tough, wear-and-corrosion-resistant Titeflex is just as effective in handling steam, oil, lubricants, fuels, gases, brine, acids, compressed air or oxygen. Design and construction of Titeflex assure trouble-free performance. Excellent for projects involving extreme configurations.

CONTROL CRITICAL PRESSURES. How would you connect 280 cylinders of fire-extinguishing carbon dioxide at 850 psi to line? Walter Kidde & Company licked this problem with Titeflex flexible metal hose which met all insurance standards and withstood rigid application requirements. Titeflex also conveys hundreds of different fluids under as many different temperature and pressure conditions. Resists corrosion, vibration, physical abuse.



CONDUCT STEAM SAFELY. Plates for Carver Laboratory Press carry steam up to 200 psi (nearly 400°F.) for heating—water for cooling. The connections are flexible, pressure-safe Titeflex. Braiding gives extra strength. Added problems of vibration, pulsation, continuous movement, corrosion or abrasion make Titeflex invaluable in scores of other applications.



FIGHT FATIGUE AND WEAR. Titeflex metal hose eliminated maintenance on air control lines of Unit Mobile Cranes. All-metal construction, with braiding woven directly upon the hose, provides great strength and resistance to vibration, corrosion, wear and abuse. Flexibility of Titeflex permits simplified assembly even where space configurations are problems.

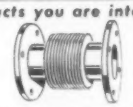
THE USES FOR TITEFLEX® seamed flexible metal hose and Uniflex seamless flexible metal hose are limited only by engineering ingenuity. And Titeflex design engineers—working *with* customers—develop new applications daily. Somewhere in your plant or on your products Titeflex can improve operation and maintenance—or simplify a design problem. Our *new 48-page Metal Hose Catalog* No. 200 shows you how and why. To get your free copy, simply mail the coupon.

Let Our Family of Products Help Yours

Titeflex

✓ Check products you are interested in.

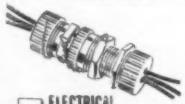
☐ SEAMED AND SEAMLESS METAL HOSE



☐ PRECISION BELLOWS

☐ IGNITION HARNESS

☐ IGNITION SHIELDING



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Bakers' pads and gloves

Which of these can you use?

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- **Pads and gloves for bakers**
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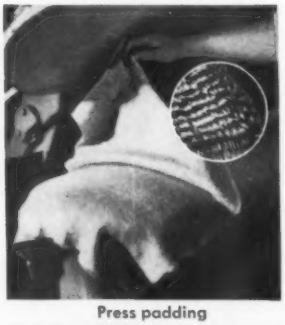
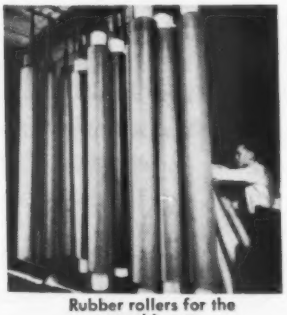
- **Roller coverings, roller cleaners, rubber rollers for the graphic arts**
- **Rubber rolls for industry**

Write us for complete information on any of these products or Jomac Cloth for other uses.



Press padding



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PHILADELPHIA 38, PA.

Plants in Philadelphia, Pa., and Warsaw, Ind.

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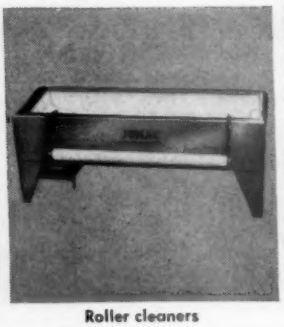
Oct. 19-23 — National Metal Exposition, Cleveland
Oct. 19-23 — 41st National Safety Congress and Exposition, Chicago
Oct. 27-Nov. 1 — National Association of Photolithographers, Chicago

Seamol and Flamol seamless roller coverings



Roller cleaners

Rubber rolls for industry

Office Mechanization

(*Continued from page* 176)

try with a sturdy challenge with respect to designing and building office machines. I believe you will find the response in many of the refinements and improvements that have been introduced in office equipment during the last year or so.

Features have been developed which have greatly increased the automatic functions of machines. At the same time, it has been possible to reduce materially the effort, and training formerly required of a machine operator. The well-proved secret of mass production technique is, after all, to automatize wherever possible, and where human effort is required, to make several simple operations out of one long and complicated one. This integration of procedures and machines has proved possible in a wide area of office operations and has been successful in reducing costs.

A recent trend in the design and construction of office equipment has been motivated by another consideration. Office problems have become increasingly acute in the medium and small size concerns. It is obvious that the expensive and highly specialized machines designed to accommodate the volume of large banks, insurance companies and department stores, are not suitable for, say, the thirty bed hospital, the smaller banks, or the garage and drug store. Yet, the paperwork burden imposed by modern business conditions is often, by comparison, just as heavy. There has been, therefore, a considerable effort to produce office machines whose flexibility would insure a minimum of idle time, and whose price would fit a more modest budget. Here too, it has been possible to keep manual operations simple and to increase the automatic functions of the equipment.

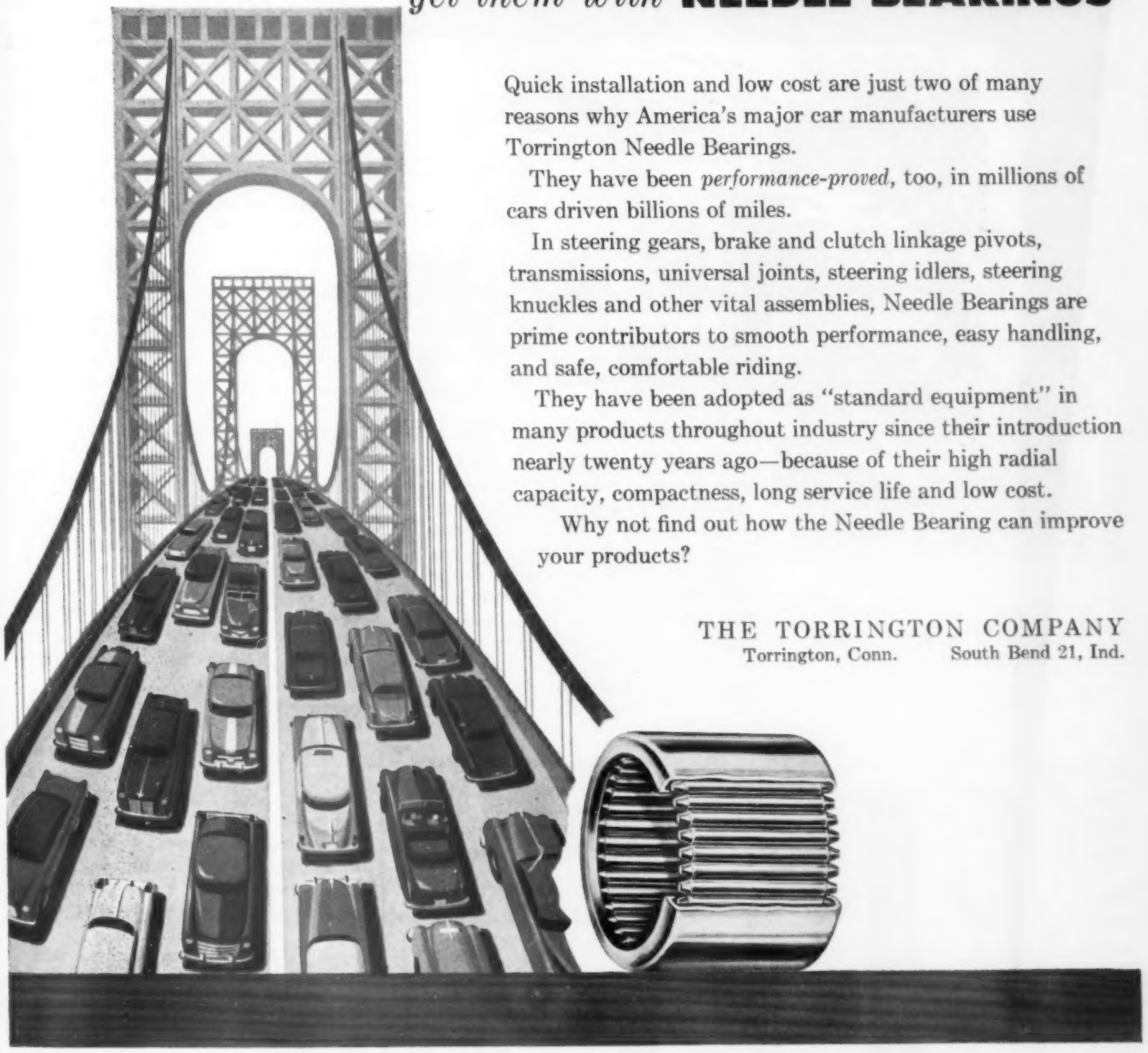
It is evident, I think, that the direction we have been following in our quest to improve office productivity has been toward more and more automatic office operations. As to where this will lead us, there is an interesting clue, it seems to me, in the major developments which have come along up to now.

The early business tools — the typewriter, the adding machine, the calculator and cash register—greatly increased productivity on some steps in the flow of business data. But as we know, they did not reduce appreciably the number of steps. Just

(*Please turn to page* 364)

Are Easy Assembly and Low Cost "Musts" for You?

Here's how leading automobile manufacturers get them with NEEDLE BEARINGS



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ALLOYS • STAINLESS
CARBON • BRONZE

Representatives in Principal Cities.

Office Mechanization

(*Continued from page* 362)

as many people were required to edit incoming business data, to move information from one process to another, to look up supporting information and supply the intelligence required to dispatch it properly.

This fact is significant. I'm sure I don't need to explain that the number of people who do the actual processing *within* each step is but a small proportion of the number required in the total flow of business. To cite an example, a recent survey of department stores showed that in the accounts receivable departments, machine operators amounted to only fifteen percent of all those employed.

A development which made a significant dent in the total clerical population was the accounting machine. Combining as it did document production with computation, it assimilated several steps into one, thereby reducing the number of people required to move data between steps.

With the development of multiple registers and front feed carriages, it became possible to integrate whole sections in this flow of business data. Increased productivity here resulted primarily from the elimination of steps—and secondarily, from speeding up the process.

These trends have continued up to the present.

As progress continued along these lines, punched-card equipment was evolving according to a somewhat different philosophy. While other accounting machines concentrated on integration and combining steps, the punched-card system retained sequential stages in processing data. Instead, it introduced a two-fold novelty. First, it mechanized sorting; and secondly, it featured automatic machine operation.

Increased productivity from systems of this nature was realized from time saved at each mechanized step in the flow of business data.

This is, naturally, an oversimplification, and certainly does not take into account the many advantages which can be claimed for both systems. It is simply intended to point out the two basic approaches to mechanized data processing. One has increased productivity through integration and combining steps; the other, through high speed operation of sequential steps.

At this stage in the game, therefore, with one group of manufacturers concentrating on saving man

(*Please turn to page* 366)

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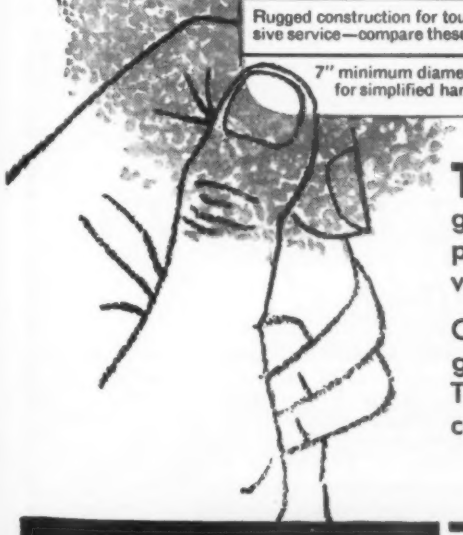
VALVE COMPARISON CHART

BASED ON 2" GATE	COOPER ALLOY	COMPETITORS A	B	C
Ball and socket rotating type disc for positive seating with minimum galling	✓	✓		
Discs and seats designed for simple reconditioning in the field	✓	✓		
Centerless ground stock to cut packing wear	✓	✓		
¾" minimum stem diameter to assure rigidity	✓		✓	✓
Deep stuffing box with six turns of ¼" square packing	✓		✓	
Packing gland designed to deliver square, uniform compression	✓			
Two piece gland construction to prevent gouging of the stem	✓	✓		✓
Swinging eyebolts to simplify repacking and provide added safety	✓			
Simplified yoke nut construction to permit replacement without interrupting service	✓			✓
Grease fitting to eliminate friction on yoke nut during opening and closing	✓			
100% x-ray of vital cast components	✓			
A stainless steel valve designed and produced by stainless steel specialists	✓	✓		
Stocked in major industrial areas by nationwide distributor organization	✓		✓	✓
Rugged construction for tough corrosive service—compare these weights!	33 lbs.	28 lbs.	28 lbs.	24 lbs.
7" minimum diameter wheel for simplified hand closing	✓			

COOPER ALLOY VALVES PROVE SUPERIOR!



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MOLINE IRON WORKS Since 1873 MOLINE, ILLINOIS U.S.A. SEVENTY YEARS OF SERVICE

Office Mechanization

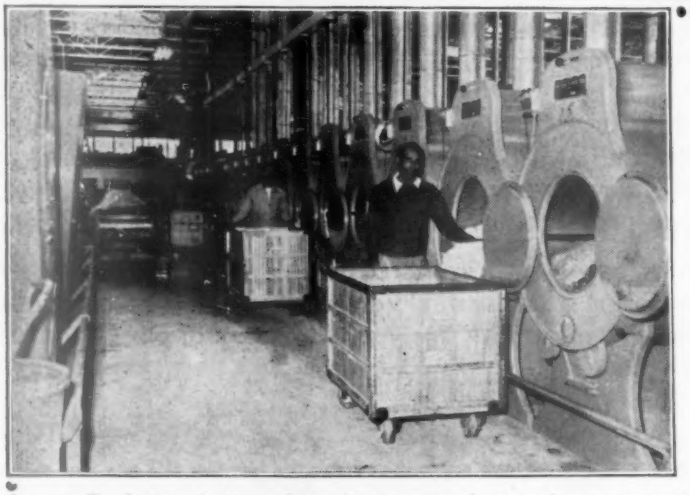
(*Continued from page* 364)

hours through greater integration, and another through speeding the various processing operations, it is small wonder that systems and procedures men have asked: "Why not both?"

It seems a specially logical question in view of the extraordinary efficiency with which these same goals have been achieved in scientific computation through the medium of electronics.

As you know, many companies are well underway on extensive and long range research programs to explore the possibilities of applying electronic and other scientific developments to office use. And from the progress already made, it would appear that we are witnessing the beginnings of an evolutionary era in which, through the use of these fascinating new media, an ever increasing degree of speed and automaticity may be anticipated in office work.

Already, we have heard of instances where electronic equipment has been used for specific office jobs. And indeed it is as extraordinary as it is encouraging that the many obstacles that stood in the way of these initial applications could have been so rapidly overcome.



Section of Drying Department in typical S.I.A. Member plant. Here, after thorough washing in a solution containing proper detergents (a .76% caustic or chloride of lime solution), cloths are dried at a temperature of 212° Fahrenheit to eliminate all moisture and insure sanitation.

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Select an Institute member as your supplier for Sanitary Wipers, and you'll be sure of getting a product that is the established standard in industry. For the past 20 years, members of the Sanitary Institute of America have been developing and improving the methods of processing Wiping Cloths; so that today they can supply you with Wipers that have all the desirable attributes for efficiency, safety and economy.

The Sanitary Institute of America has a membership of over one hundred leading industrial wiping cloth processors in twenty-seven of the United States. This advertisement is sponsored by the members listed below.

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PEERLESS MIXER

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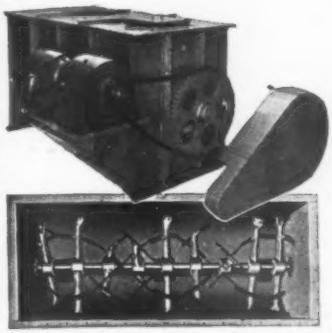

Here's the most adaptable mixer ever built!
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LETTERS . . .

QUOTE — UNQUOTE

Your copy of June, 1953, carries the following statement: "To cure whatever it is that's the matter with business — abolish all industrial purchasing departments!" Then you say that is the advice given by James F. Lincoln, President of The Lincoln Electric Company, in a recent discussion program on Station WTAM, as reported by the *Plain Dealer*.

I have never said any such thing, I have never believed any such thing, and no one with an ounce of brains would ever have distorted what I said into that.

I ask you to correct this error.

J. F. Lincoln, President
The Lincoln Electric Co.
Cleveland, Ohio

● PURCHASING regrets the apparent misconstruction placed on Mr. Lincoln's remarks and is glad to publish this disclaimer. The paragraph in the June F.O.B. column was drawn directly from an item in the March 2, 1953, issue of the Cleveland Plain Dealer, reporting the radio discussion program under the caption, "Asks Industry End Purchasing Staffs". The opening statement of that report was: "Death of industrial purchasing departments was urged yesterday by James F. Lincoln. . . ."

Upon further inquiry regarding the actual substance of the radio discussion, Mr. Lincoln writes us as follows in amplification of the above quoted letter. Far from the categorical denunciation of purchasing as originally reported, it is a strong and understanding statement of the principles of value analysis as practised in progressive, constructive modern purchasing departments.

"Let me tell you exactly what I did say. I can't give you the words I used, but I can give you the information, because it is something that we do here ourselves and I am sure it is being done more and more by all companies. That is, to find out what the market affords to cover any given specifications, rather than blindly following the specifications which may be given to the Purchasing Department by the engineers or by the manufacturing department in the plant.

"The engineers or manufacturing departments who write the specifications as to what it is they need to do the manufacturing that they have in mind, generally are not fully aware of all the things that the market affords that might do the same job for less money, or do it better, or both. It is my belief that the people in the purchasing department should be the people who constantly would be in touch with the people on the outside, so that a change in the specifications which would give them a better product, a cheaper product, or both, could be made available to fill any specifications that are given them."

ELECTRIC DESK STAPLER

On page 210 of the May issue of PURCHASING you show an electric stapling machine that is being used by the Cleveland Electric Illuminating Company. We are interested in a machine of this type and would appreciate it if you could send us information as to the manufacturer.

M. J. Hart, Asst. Pur. Agt.
Shawinigan Water & Power Co.
Montreal, Canada

● Several readers have expressed an interest in this equipment. The machine illustrated is a product of the Staplex Co., 450 50th St., Brooklyn, N. Y. Other manufacturers of electric desk staplers include Bates Mfg. Co., 14 Central Ave., Orange, N. J.; Burgess Fastening Co., 1222 W. 9th St., Cleveland, O.; and Heller Co., 215 E. Superior Ave., Cleveland, O.—Ed.

TOPSIDE APPROVAL

I found the May "Purchase for Profit" issue most interesting. I shall appreciate it if you will please send me an additional copy at your convenience.

H. C. Roemer, President
Federal Telephone & Radio Corp.
Clifton, N. J.

PURCHASING REVOLUTION

I have just completed reading the thoroughly timely article "The Purchasing Revolution" in the July issue of PURCHASING. In my opinion, other purchasing personnel would be as enthusiastic as I, and it is my intention to bring Mr. Hill's comments to their attention. I would appreciate your forwarding to me 40 copies of this article for distribution.

B. J. McNamara, Pur. Mgr.
Pratt & Whitney Aircraft
East Hartford, Conn.

● Reprints sent. Copies of Mr. Hills' excellent article, which was the keynote address at this year's N.A.P.A. convention, are available in convenient pocket size booklet form for other readers who may wish to follow Mr. McNamara's example. — Ed.

FORD PURCHASING ISSUE

Along about 1949 you published a purchasing manual on the Ford Motor Company's purchasing system. If possible, we would like to have two copies. Will you please advise us if these publications are available.

F. A. Wilcox
Asst. to Dir. of Purchasing
Krafts Foods Company
Chicago, Ill.

● The classic "Ford Issue" of PURCHASING, which made business paper history in July 1948, became a collectors' item within a few weeks of its publication, despite a large extra printing. Subsequently, the editorial section, in slightly abbreviated form, was reprinted under the title "Ford Purchasing Methods". A limited supply of these booklets are available. — Ed.

PLASTIC CARBOY

We would be interested in getting some additional information on the plastic acid carboy, Cost Saving Item No. 154 described in the May issue of PURCHASING. Will you please let us know who manufactures this item?

H. C. Holmes, Pur. Dept.
Corn Proucts Refining Co.
Chicago, Ill.

● The manufacturer is Plax Corporation, Div. of Hartford-Empire Co., Hartford, Conn. — Ed.

USEFUL ANALYSIS

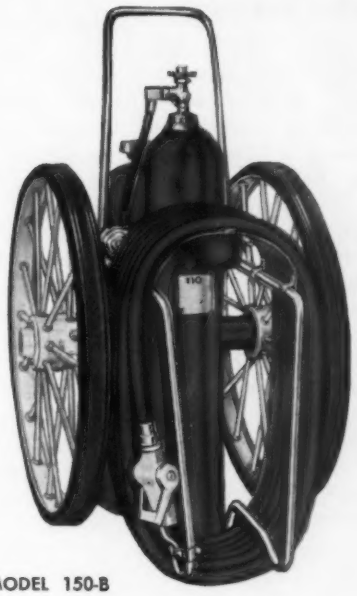
The outline presented in the article "Analyzing Traffic Management" by Herman Limberg, in your April issue, is of particular value to a project I have presently working to establish an overall sales program for water carriers. I will greatly appreciate receiving an extra copy of this article.

E. L. Carlson, FTR
Matson Navigation Co.
Chicago, Ill.

● Tear sheets sent. — Ed.

NEW

ANSUL WHEELED FIRE EXTINGUISHERS *provide*



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Ansul "B" Model Wheeled Extinguishers are completely new. Dozens of design changes have improved their operating characteristics as well as their appearance. They provide faster, easier extinguishment of fires almost twice as large as those handled by our "A" model wheeled extinguishers. New Ansul Wheeled Extinguishers are easier to move to the fire. They can be actuated faster. They'll put out more fire faster. They're easier to recharge and maintain. And they will give even more years of trouble-free service.

MODEL 350-B

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Special Tubing Solves Problem Caused by Nickel Shortage

Scarcity of high nickel alloys has brought about many difficulties for industry in finding suitable substitute materials. Filling valve nozzles in filler-crowners in the beer bottling industry, for instance, posed a problem. It is essential in this operation that the nozzle directing the flow of beer into the bottle be always immaculately clean to prevent destroying the flavor. Therefore extensive use is made of corrosion-resistant, easily cleaned metals. The problem presented by the scarcity of high nickel alloys was solved by the Crown Cork & Seal Co., Baltimore, Md., with the help of tubing supplied by Superior Tube Co., Norristown, Pa.

Original specifications for the filling valve nozzles called for cupro-nickel alloy with 20% nickel content. As supplies of this alloy were curtailed it became necessary to find a substitute material. Type 304 seamless tubing, was found to be a highly satisfactory substitute for the cupro-nickel formerly used. As it contains only 8% nickel compared to 20% nickel in the cupro-nickel alloy replaced, use of the stainless tubing affords substantial saving of the scarce metal, at the same time meeting the exacting requirements of the application.

Produce Fiberglas Cloth Only .001" Thick

Production of the finest Fiberglas cloth ever woven in this country has been reported by Soule Mill, New Bedford, Massachusetts.

The cloth, which measures .001" in thickness and weighs .81 ounces per square yard, is made possible by using Fiberglas yarns finer than any ever before produced. Commercial production of this fabric is the culmination of a year's joint research by Soule and Owens-Corning Fiberglas Corporation.

Principal significance of the cloth, according to Marvin W. Butler, Sales Manager of Soule Mill's Industrial Fabrics Division in New York, is its applications in the electrical apparatus industry where, as the carrying medium for mica and insulating varnishes, it will permit design engineers to further reduce space factor requirements.

In spite of its sheerness—20 yards of fabric 36" wide are woven from one pound of glass yarn—the cloth is remarkably strong. This new Fiberglas fabric represents a reduction of 33-1/3% from .0015" glass cloth, the thinnest made until now and which has been produced in volume for years exclusively by Soule. Mr. Butler sees a number of additional potential applications in the general plastic and film reinforcement fields.

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Purchasing Ass't seeks position in manufacturing. Experienced construction equip., hardware, fittings, general, export packing. Age 29, college grad, NYC, relocate, resume on request. Write Box 1392, Purchasing, 205 E. 42nd St., New York 17, N. Y.

Purchasing Agent or Assistant, 4½ years experience; machine shop and general purchasing background. Age 33, College grad., Bus. Administration. Write Box 1393, Purchasing, 205 E. 42nd St., New York 17, N. Y.

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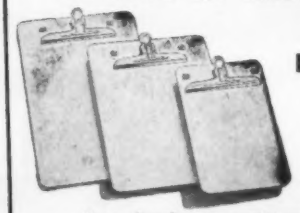

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